BOOK
ONE

Making Sure of Arithmetic

MORTON
GRAY

TEACHER'S
EDITION

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Book
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Making Sure of Arithmetic

by Morton Gray

Teacher's Edition

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OUTLINE OF THE GRADE ONE LEARNING PROGRAM

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THE "MAKING SURE OF ARITHMETIC" PROGRAM

The whole purpose of the program presented in *Making Sure of Arithmetic,* Grades One to Eight, is to make it possible for children to succeed in understanding and using arithmetic. A program with this aim has to be planned and built around the growing child in a learning situation. It *is* so planned and so organized. It is a program which insists on the child's right to succeed in a subject which is admittedly difficult.

The program is scientifically organized both from the standpoint of the learning process and the nature of arithmetic itself. It recognizes that learning is a slow, continuous process and that arithmetic is a sequential subject, a system of interrelated and expanding ideas. It provides for continuous growth in the understanding of these ideas. Once an idea or topic is introduced, it receives *planned* attention throughout the remainder of this series of textbooks.

Arithmetic can be made less difficult for children if we recognize that the child does not learn any new arithmetic process or idea completely in any one grade. The arithmetic program must be based upon the principle of growth. It must be so organized that the pupil gains a richer understanding as he proceeds from grade to grade—as he becomes more mature. It must also take into account the fact that from one year to the next, and even during a school year, children often forget what they learn, no matter how well they have been taught.

The learning program of *Making Sure of Arithmetic* is based upon the principle of growth, and provides fully for continuous broadening and deepening of understanding from year to year. One of the most important provisions for growth, in each book of the series from the second grade on, is the reteaching section. The reteaching section redevelops and reteaches every topic, idea, and process previously introduced in the series. This new chance to understand and succeed at the beginning of the year not only helps all of the pupils to grow in understanding and skill, but saves from failure many pupils who otherwise would become learning casualties in arithmetic. It saves these pupils from the social and emotional maladjustments which result from failure.

It is a major function of the school to give the child the *security of understanding.* Security in arithmetic comes not only from repeated opportunities to learn at increasingly mature levels, but from the clarity and lack of distraction with which arithmetical ideas are organized and presented. When children learn that 4 and 4 are 8, they are ready to see immediately that 4 from 8 is 4. Thus, understanding the relationship between addition and subtraction reduces the difficulty of learning and is permanently meaningful. *Making Sure of Arithmetic* develops this essential understanding. It contributes to the child's security by making sure he understands what he will continue to use. It would be possible, of course, to help the pupil discover the fact $8 - 4 = 4$ in another way. For example, the child could "count backward" from 8 by ones until he had counted 4 ones: "7, 6, 5, 4." He could thus discover meaningfully that 4 from 8 is 4. However, *Making Sure of Arithmetic* avoids the use of this method and all such secondary approaches because they do not contribute to the child's security and will not be of permanent use. This device, and literally dozens of similar devices that seem meaningful on first inspection, are digressions from the main highway of meaning. They tend to confuse the child and threaten his security. *Making Sure of Arithmetic* is so planned that it gives the child the security of understanding.

Children will succeed in arithmetic and enjoy it if they are conscious of steady progress. To make steady progress, children must understand what they are doing when they add, subtract, multiply, or divide. They must understand the number system—that it is a system of ones, tens, hundreds, etc.—and they must understand the significance of zero and place value. They must understand the relationship between addition and subtraction; between addition and multiplication; and between multiplication and division.

They must see the relationships between operations with common fractions and with whole numbers, etc. Such understandings are continuously developed throughout the *Making Sure of Arithmetic* program.

The plan of this program is aimed throughout at developing permanent power in arithmetic. Some of the most significant parts of this plan are listed below.

(1) Every new idea or process is developed step by step.
(2) There is continuous redevelopment and reteaching throughout the series.
(3) The program anticipates, and therefore avoids, learning difficulties.
(4) It provides scientifically built and well-distributed practice in each book.
(5) The abundant motivation is skilful and resourceful.
(6) It emphasizes diagnostic testing which reveals to pupil and teacher just what the difficulties or deficiencies are.
(7) It provides a consistent maintenance program within each grade and from grade to grade.
(8) Provision is made for individual differences in ability and achievement at each grade level.
(9) It contains a carefully organized program of problem solving which stresses ability to see and understand relationships.

Making Sure of Arithmetic is not only thought out carefully in its structure and overall plan, but is created with infinite concern for the smallest detail. The language used in presenting ideas has been examined and re-examined, sentence by sentence, and word by word. The authors and editors have charted the use of every addition, subtraction, multiplication, and division fact, every common and decimal fraction, every divisor, dividend, and quotient, and every measurement concept, so that none of what the children have begun to learn will be neglected at any grade level. Prices of items used in problems are real as of the date of publication. Railroad and airline fares and distances are not imaginary, but actual. Information of vital social and personal importance has been built into the books as a basic policy rather than occasionally or by accident. The materials have been evaluated on the basis of how well children in thousands of classrooms have succeeded in using them.

In its learning organization, its provision for growth from year to year, its mathematical integrity, and its faithfulness to detail, *Making Sure of Arithmetic* was created to develop permanent power in arithmetic.

THE "MAKING SURE OF ARITHMETIC" PROGRAM FOR GRADE ONE

The program for Grade One in *Making Sure of Arithmetic* has been planned and developed around the growing child in a learning situation. It is a program for teaching *children* arithmetic which recognizes the child's eagerness to learn and his right to succeed at each step of the way as he learns. The entire program has been planned and built with the most careful attention to the way in which the child learns.

The Need for Systematic Instruction

Prior to admission to the first grade, children have had a variety of experiences which are in part quantitative, and hence have contributed to the development of number concepts.

A child entering the first grade knows that he is, or soon will be, six years old. He knows how much an ice cream cone costs; how many members there are in his family; how many fingers and toes he has; how many cars there are in his toy train; the number of pieces into which he must divide a candy bar in order to share it with a friend; and so on. He may know how to count and how to tell time. He may know his house number and telephone number. In fact, the list of quantitative ideas which he needs, or tries to use, in his daily experiences may be comparatively long, since arithmetic is so much a part of his everyday life.

However, to many children these ideas are vague. Some children have misconceptions about everyday quantitative situations. It is not uncommon to find the six-year-old using cumbersome, roundabout methods; nor is it uncommon to find children of this age who fail when they try to cope with the quantitative situations that face them.

These children are ready for and need systematic instruction. The program as planned for Grade One in *Making Sure of Arithmetic* takes the child where he is and rounds out his previous number experiences, makes them clearer and more complete, and advances his understanding and skill through systematic instruction.

Purposes of the Program

Three major purposes motivated the planning of the *Making Sure of Arithmetic* program for Grade One. One of these purposes was to make it possible for children to succeed in understanding and using arithmetic, both in school and out of school. Another was to help them develop permanent power in arithmetic, which can come only from a program based upon the principles of growth, and designed for the continuous broadening and deepening of understanding as the program unfolds day by day. The third purpose was to make sure that each child would attain his maximum growth.

Other objectives of the program are:
(1) to put in order, sharpen and define, and make more nearly complete those number concepts which have already begun to develop in the child's mind
(2) to relate these ideas to each other, make them more meaningful, and, in so doing, build toward permanent understanding
(3) to develop skill in using arithmetic in out-of-school experiences as well as in-school experiences
(4) to build a foundation capable of sustaining the program of arithmetic in later grades

The Systematic Character of the Program

Arithmetic is an ever-expanding system of interrelated number concepts. Understanding one phase of the system depends upon an understanding of preceding phases. For example, the child cannot do meaningful and accurate rational counting until he understands one-to-one correspondence – the matching of the objects in one group, item by item, with the related objects in another group. He cannot see the relationships among numbers in the various decades of the number system until he understands the numbers from 1 to 10. He cannot combine small groups to make larger groups and determine the number in the larger group (add) until he can determine, by using rational counting, the number of items or objects in each of the smaller groups. Thus, each new experience depends upon understanding previous experiences.

The building of a genuine understanding of the addition and subtraction processes is not arrived at all at once. A systematic program of repeated, meaningful experiences is necessary to insure continued growth. This Teacher's Edition and the pupil's book present a teaching-learning plan and specific ideas for a systematic development of number concepts and skills.

The Learning Organization of the Program

When children are interested and can understand, they learn. In arithmetic, as in any other subject, they are interested if the concepts are presented in a way to show their usefulness, and if they are made understandable. Children understand, and are interested in, the things which are close to their experiences and are on the level of their maturity.

The content of the program of *Making Sure of Arithmetic*, Grade One, is based upon the needs and experiences of children. The content has been analyzed to determine the learning steps which the child must take in order to learn it. Because these learning steps are organized into a teaching sequence that provides for ease of learning, the child, as he takes each new step, understands its relationship to the preceding step. In this way, the pupil grows in understanding arithmetic as a system of closely related, interdependent ideas and processes.

A genuine learning organization not only presents content in a learning sequence, in an interesting and familiar setting, and with clear and understandable language, but also presents it at a rate keyed to the child's ability to learn. While ample time is devoted to the development of difficult concepts, the less difficult are never neglected. Provision is made for the reintroduction of concepts at planned stages; hence no skill or understanding is allowed to deteriorate through protracted periods of disuse. Provision is made for the expansion of familiar ideas and skills as the child progresses, and as his foundations for additional understandings become more secure. In short, the learning organization of the program is designed to provide for continued, gradual growth in all aspects of the number program throughout the year.

A Program for All of the Children

The children entering Grade One will differ widely in their understanding of numbers and in their ability to use arithmetic. Some of them will need opportunities to clarify their vague ideas about numbers. Others will profit from new experiences which will enrich and extend their understanding. Still others will have meagre backgrounds of experience on which to build.

The program planned for Grade One will undoubtedly prove to be a minimum program for some children who learn easily. They probably will do all of the suggested enrichment activities, and bring into the program arithmetic from their out-of-school experiences. On the other hand, the program will probably be a maximum program for some of the slower-learning children, who will need all of the suggested additional learning helps to fill in the gaps in background of experience and make up for their lack of maturity.

The plans suggested for carrying out the program include ways of extending and enriching it and also of adjusting the content to the ability and maturity of the slower learners. It is the philosophy of *Making Sure of Arithmetic* that every child must experience success in the things he undertakes, and feel that he is growing. Therefore, the plan for this year includes suggestions for helping every child learn at his own rate and level of ability.

The program is based upon the conviction that arithmetic is *not* learned all at one time, but that many opportunities to learn, over a long period of time, lead from partial learning to eventual mastery. While the program for Grade One will be retaught in Grade Two, many of the children in Grade One will attain a high degree of mastery of the concepts and skills presented. Others will attain only partial learning and a minimum of skill.

The Realistic, Concrete Nature of the Program

Since this program of arithmetic is developed around the growing child in a learning situation, it draws heavily upon the realistic, common experiences of children and takes into consideration the way they learn. The situations in which young children use numbers involve concrete things such as toys, money, and materials of various kinds. The content of the program is planned around realistic experiences with these materials. The number stories (problems), the situations in which concepts are developed, the introduction of measures, etc., all utilize such experiences.

Dramatization—play acting—is one of the most fruitful ways in which children learn. Therefore, this program utilizes dramatization as an important part of the plan for helping children understand the processes and the concepts to be developed.

First-grade children need many concrete experiences before progressing toward the semiconcrete and the beginnings of the abstract. The emphasis throughout the program is upon developing an understanding of quantitative relationships and attaching meanings to them. The use of concrete objects, realistic experiences, and kinesthetic responses, as suggested in the Teacher's Edition, contributes richly to these understandings and paves the way for a meaningful approach to abstract thinking.

After the children have used dramatization and concrete objects, they use the teaching pictures provided in the pupil's book which illustrate realistic situations. These teaching pictures constitute a semiconcrete approach to the concepts and ideas being introduced. Thus, with each learning step, the child moves gradually from dramatization to the use of concrete objects, and then to working with the semiconcrete (pictured) objects in the pupil's book.

Since children of this age use numbers only in connection with realistic experiences, the transition to the abstract is not made in this grade. However, the way is paved for the transition to the abstract, which is made in Grade Two.

The Problem Solving Program

The goal of all arithmetic teaching is to develop the ability to use numbers and do the precise type of thinking necessary for problem solving. In life experiences the need to use arithmetic grows out of problems which must be solved.

Since first-grade children have problems to solve in their out-of-school experiences, even Grade One is not too early to begin to help children learn to solve problems.

A systematically planned program of readiness for reading and interpreting problems begins when addition is presented in the pupil's book. The stories are provided in the Teacher's Edition. Each story is told to the children while they interpret (read) a picture and answer the question that is asked. Gradually, through many experiences in interpreting pictures which illustrate arithmetical situations, and by becoming familiar with the oral vocabulary and language pattern used in problems, the child grows in readiness for problem solving.

Making Sure

The title, *Making Sure of Arithmetic,* is more than the name of a series of texts. It is the theme of a learning program that was planned to do just what the title says. The program was built around the hope that every child who uses it will gain genuine "sureness," understanding, and skill in using arithmetic.

This "sureness" will come in part from the provisions for evaluating the children's work at the end of each learning unit. The tests make possible a careful diagnosis of strengths and weaknesses. Following this diagnosis, the teacher and each child will know the specific relearning steps that must be taken before the child is ready to go on with the next learning steps. Since arithmetic is an ever-expanding system of number relationships, a new step cannot be learned until the foundation is laid.

A series of "Making Sure" tests, eleven in number, occurs in the Grade One program. These tests are placed at the end of each major learning unit and at the end of the book. The purpose and plan of the tests is to enable both the teacher and the children to find how complete the learning has been and what the specific difficulties are after a given learning unit has been completed. The tests at the end of the book are planned for an evaluation of the year's work.

Suggestions for retracing learning steps, as shown by the tests to be necessary, are provided in the Teacher's Edition immediately following the tests.

Making Sure of Vocabulary

Many of the mistakes children make in arithmetic are caused by the vocabulary. Yet there is a language of arithmetic which children must have access to. Much of this language must eventually become a part of the reading vocabulary of the children.

In planning *Making Sure of Arithmetic,* Grade One, the authors recognized that many of the arithmetical terms needed by the children can become a part of their oral vocabulary at this grade level, but their introduction as part of the reading vocabulary may well be postponed until Grade Two or Three.

Except for the absolutely necessary arithmetical terms, the vocabulary finally decided upon for *Making Sure of Arithmetic, Book One,* consists only of preprimer and primer words. This is a "built-in" vocabulary, with every word introduced in the pupil's book in a realistic way. Moreover, not more than three new words are ever introduced on any given page. A careful tabulation was kept and a systematic plan worked out so that very gradually a vocabulary adequate for the semiconcrete steps in addition and subtraction and for simple directions was introduced. The total vocabulary is 50 different words.

GENERAL SUGGESTIONS FOR CARRYING OUT THE PROGRAM

The influence of the teacher is exceedingly great in translating the program into action and creating from it a series of rich and vital experiences for the children. Regardless of the philosophy on which the program rests, it is only through the teacher that arithmetic can become a satisfying and inspirational learning experience for the children. In truth, it can be for the teacher herself a creative experiment in guiding children wisely.

The suggestions provided below are given in the hope that they will lead the teacher to think of other ways to enrich the program and make it serve better the purposes and needs of children.

Providing a Stimulating Learning Environment

In days gone by, learning may have resulted in a schoolroom equipped only with books and benches. But experience has taught us that a program which aims to develop understanding and skill in using arithmetic will be more likely to succeed in an environment that has some of the characteristics of a learning laboratory. The materials and equipment needed are ours for the taking, because most of them are "castoff" or waste materials that can be easily found. Moreover, procuring such materials for their own use is in itself a rich learning experience for the children.

The reading table, the science shelf, and the art corner have become an accepted part of the equipment of the modern classroom. For a similar reason, an arithmetic corner or table or shelf is equally useful.

Often two orange crates, with a 6-foot or an 8-foot board, salvaged from a scrap pile, nailed across the tops of the crates, can serve as a substitute for a table or shelf. Three or five orange crates, stacked lengthwise, one on top of the other, in stairstep fashion, and fastened together with nails or screws, can serve nicely as open shelves to hold materials.

Making Concrete Materials Available

The materials provided for the arithmetic corner consist of concrete objects: toy money; pictures, often cut from magazines; practice materials; matching and counting games made by the children; and so on.

These materials should be used by the teacher and children to give meaning to concepts being developed.

Many suggestions for making games, charts, and study and practice cards will be made later. For those purposes the following materials should be available:

- pieces of cardboard, oaktag, the backs of writing tablets, or corrugated paper
- a roll of wrapping paper, or wrapping paper salvaged by the children and brought from home
- a supply of white and colored construction paper, or scraps of paper salvaged from the local printer's shop or wallpaper shop
- large pieces of newsprint or other inexpensive paper with lines 2 inches apart, or wrapping paper lined by the children, to be used for making charts
- paper 9 x 12 inches and 12 x 18 inches in size, ruled in ½″ and 1″ squares (if not available, can be mimeographed or hectographed by the teacher)
- lids from one-gallon, two-gallon, and five-gallon ice cream containers, or paper pie plates for making clockfaces
- an old alarm clock
- pieces of wood, string, ribbon, and cord for measuring
- a wall card chart holder, which can be made by pleating a dry cleaner clothes bag and sewing it on the machine (with the clothes hanger left in the top so that the holder can be hung on the wall)
- boxes containing 10 to 100 small objects such as buttons, pegs, golf tees, acorn caps, corn, well washed milk bottle caps, counting cubes, or parquetry design blocks (Each child should bring his own. They will be needed almost daily.)
- many counting sticks, toothpicks, or milkstraws or strips of cardboard cut to about 2- or 3-inch lengths, to be used in bundles of 10 and singly to develop the meaning of numbers.
- a collection of small plastic toys, such as cowboys and Indians, animals, tiny dolls, balls, tops, cars, airplanes, boats, trucks, doll furniture, to be used in illustrating and dramatizing facts and processes.

Having the children collect these things and get them ready for use is one excellent way to make sure that the children will use them during their leisure time to develop understandings and for practice.

Many of these materials are available commercially. But having the children collect them and bring them in, or make their own, is an excellent learning experience. Also, there is likely to be more interest in the purpose for using the concrete materials and less interest in the materials themselves if they are simple everyday things rather than the kind that approach the toy or game category.

Utilizing Out-of-School Experiences

Another way to create a stimulating learning environment is to utilize the children's out-of-school experiences with arithmetic as often as possible. Having them keep a record of the money they receive and of the money they spend is an excellent way to help the children realize that arithmetic is really useful to them. Often the number stories used in introducing addition or subtraction facts or in problem solving can be based upon out-of-school experiences.

Anticipating New Things in Arithmetic

Another excellent way to add to the enthusiasm for arithmetic is to tell the children ahead of time when something new is to be introduced. For example, the teacher might ask one of the boys to bring his set of small cars or airplanes to use in introducing a new arithmetic idea, such as an addition fact. The children may find what things can be bought for a penny, a nickel, or a dime so that the realistic situations can be used the next day when "buying and selling" are introduced in number stories.

Using the Teacher's Edition and the Pupil's Book

The Teacher's Edition and the pupil's book together constitute the program of instruction in *Making Sure of Arithmetic*, Grade One. Neither is complete without the other.

Most teachers believe that it is helpful to them to know not only the philosophy of the program, but what teaching procedures and what techniques the authors think will be most effective in guiding the learning of the child as he takes each learning step.

The Teacher's Edition is intended as the teacher's source book for planning. It is rich in suggested techniques and procedures. The teacher uses it as a guide in planning and as an explanation of the learning steps in the program.

The Teacher's Edition of *Making Sure of Arithmetic*, Grade One, was planned and written with as great care as was the pupil's book. It brings to the teacher for every large learning unit an overview of that unit. The overview presents the general suggestions for procedures and explains the relationship between that unit, preceding units, and units to follow. It guides the teacher in the long-time planning for the children.

The day-to-day suggestions for each page of material in the pupil's book—for each learning step which the child must take—include the following:

Preparatory Activities. Here the teacher has an explanation of the purpose of the page in the pupil's book and a carefully thought-out plan for using realistic and concrete materials before the pupils are given the exercises in their books.

Using the page in the pupil's book. There are, in the pupil's book, only those directions which he can read for himself. Since an effort was made to keep the reading load for the child as light as possible, the detailed directions for using the material are in the Teacher's Edition. The exact procedure which the child should follow is given for the teacher at this time.

Follow-up Activities. These are rich in suggestions for evaluating the pupil's work and for determining what should be done before the children go on to the next learning experience. "Additional learning helps" are suggested for the slower learners. These are intended to help the teacher direct the children who had difficulty, while they retrace the necessary learning steps so that they can succeed. "Enrichment activities" are suggested for the faster learners who can do more than the work suggested in the program. These are designed to extend and enrich understandings and to permit these children to make other applications of what they have learned. Sometimes the suggestion is made that these children do other things than arithmetic if that seems wise.

The pupil's book is an application book. As has been pointed out earlier, the entire program in Grade One is developed around realistic experiences followed by the use of concrete materials, and finally followed by the use of semiconcrete (pictured) experiences. The pupil's book provides the latter experiences. In it the child applies what he has learned concretely and through the use of realistic experiences. It is the plan of the program to have the learning steps so carefully developed before the child uses his book that he is ready to apply what he knows with success.

This plan is based upon the laws of learning, which hold that, in order to learn, one must first understand completely what he is to learn; he must then try it out—practise it; and then he must apply it in a slightly different type of situation. The materials in the pupil's book provide the latter type of experience.

Evaluating Learning

Helping the pupil make sure of his progress. Success in arithmetic comes with growth in understanding and skill and with sureness in working and thinking with numbers. For the children, an important element in this type of growth is an awareness of progress and an alertness to what they need to do in order to succeed. The organization and approach of the Teacher's Edition and the tests make it possible for the teacher to discover what needs to be retaught, and to help the child understand what he needs to relearn.

The teacher, by her approach to this problem, can help each child realize that he is making progress, and make him aware of what he can do to make greater progress. By pointing out to each child exactly wherein he has succeeded, and what he needs to make sure of, the teacher can help the child, even at this grade level, to recognize that learning is an individual matter.

Friendly and encouraging comments made to the pupil as the teacher goes about the room, works with him, or goes over his arithmetic papers with him can serve this purpose. Such comments encourage the pupil and at the same time direct his efforts toward a definite goal. They also point up for him his responsibility for his own progress. Suggestions of this kind help him to think of success in his work in terms of his own growth and achievements rather than in terms of marks or grades. No greater contribution to education can be made than to substitute for the pupil's notion that he is working for the teacher the idea that he is learning something for himself and on his own responsibility. We cannot begin too early to help the pupil develop this attitude toward his work.

Finding the difficulties of individual children. The teacher who sincerely believes that all children can and should learn arithmetic and enjoy it believes also that, in order to succeed and get satisfaction from arithmetic, children must be helped to develop a sound foundation on which to build. She will wish to observe the children at each step of the way, and be constantly on the alert for indications of confusion and gaps in learning. This means that she will study each child's work and analyze his papers, especially his test papers, to find the causes of difficulty, so that she can help him overcome those difficulties.

The teacher will recognize the opportunity for such an analysis after the pupils have taken the tests which follow a series of related learning steps. She will wish to use the test results as an index of growth on the part of each child and as an indication of what he should do next, rather than as material to serve merely as a basis for giving a mark. She will wish to point out to him, not that he has failed, but that he has succeeded in certain things, and that she will help him to learn other things so that he can succeed in these as well.

Keeping records of progress. The teacher will recognize that, if she is to be able to help children attain their maximum growth, she must know specifically what progress has been made and what has yet to be learned. The teacher may wish to consider ways in which she can keep records of progress for individual children from day to day and week to week. She will be concerned with the problem of planning a form of record that can meet her needs and the needs of the children without requiring much of her time.

Some teachers find that an arithmetic folder for each pupil meets these needs. During an art period the pupils may make folders of the proper size to hold arithmetic papers. Since the papers indicate what has been learned, as well as what needs still further attention, they become a record of individual progress. The folder can be sent home from time to time for the parents to examine. It serves also as a helpful basis for conferences when the parents visit the school.

In addition to the pupil's papers, the teacher will wish to keep for her own use brief notes about each pupil's progress. These notes will include comments about strengths and weaknesses. They will, as often as possible, include the *what* and the *why* of any difficulties the child may be having, and the *plan* for correcting them. Since growth in arithmetic is a part of the child's total growth pattern, the notes may contain comments on other things besides arithmetic. Mental, emotional, and physical health may be among the factors contributing to success or failure. Notes on such factors may be most revealing as time goes on.

The teacher will certainly wish to include in her records a list of specific things the child has learned and the specific things he needs help in learning. Many of the items to be recorded can be indicated by a very few words. Others can be recorded on check lists that can be mimeographed or duplicated so that a copy can be available for each child's folder. A check list of addition and subtraction facts is a good example.

Various marks on such a list can indicate which specific facts were learned and which ones are causing difficulty for the individual child.

Probably the most valuable record is that which consists of the teacher's brief, dated comments, written on a sheet of paper. If the comments are kept brief and specific, they become a very useful record of growth, and also a record of the activities and guided experiences that helped the teacher bring about that growth.

Teachers usually find that there is only a very small group of children in each class who have difficulty with arithmetic. It is often true that only certain phases of the work cause this group difficulty. Therefore, the records for many of the children can be very brief. In many cases it has been found that having a specific record enables the teacher to discover at once the cause of the difficulty, and directs her efforts in aiding the children to overcome it. As a matter of fact, experience indicates that in a great majority of cases the period of time over which detailed records are needed is very short. The records help both the teacher and the child to get at the crux of the difficulty very early. Once the difficulty is understood, the teacher and child can work together to remove it.

Meeting the Needs of All the Children

One of the objectives of *Making Sure of Arithmetic* is the maximum growth of each child. The authors recognize that some children have had richer and more varied number experiences than others have had. Furthermore, it is understood that some children are considerably more mature and more capable of rapid progress than others. The Teacher's Edition suggests, therefore, specific ways of giving attention to individual needs. For the less able pupils, many additional opportunities for responses and discoveries are provided; for the more able pupils, there are opportunities to make applications of arithmetic at a more mature level.

Retracing learning steps with slower learners. The reteaching that is planned for the slower learners will be determined by their specific needs. The teacher will realize, as she analyzes their work and makes notes about their specific difficulties, that more practice alone is not what they need. They must first retrace the learning steps which they failed to take with success when the work was presented. The chances are that partial learning took place and that going over the steps again will give these children the one more chance which they need to understand completely what was only partially understood before. For these children, this will make the difference between the discouragement that comes with failure and the satisfaction that comes when the work is understood. Teachers find that while it does take time to retrace learning steps, time is saved in the long run.

When the teacher knows which are the specific learning steps that are causing difficulty in the program covered so far, she will wish to carry out again the suggestions in the Teacher's Edition that applied to those learning steps. In some cases it may be necessary to use concrete materials again, then to use pictured materials, and finally to provide practice materials. The amount of practice and the type provided will be keyed to the needs of individual children.

They will not all need to retrace all of the learning steps. For some there may be only a few steps that are causing difficulty. As soon as these children have made up their deficiencies, they may work with the children who are doing the enrichment exercises while the teacher devotes more time to the few children who need more thorough reteaching.

As was pointed out earlier, learning is an individual, personal matter. The fact that a child has difficulty does not need to become a cause for discouragement. By the teacher's approach to the problem, she can help the individual child and the group as a whole to accept needed help in arithmetic just as they would accept it in building a pen for a pet. As long as the teacher's attitude and her manner of working with the group encourages the willing acceptance of needed help, the slower learners will retain their self-respect.

LEARNING TO COUNT; UNDERSTANDING AND WRITING NUMBERS TO TEN

A child's understanding of numbers must be extended gradually from the ability to see a group of objects as made up of separate related items which he can match one to one, and enumerate one by one, to the ability to think in terms of groups. He must understand that a number, such as *4*, may represent a group of things, as 4 ducks. He must come to understand also that the group of four may be made up of smaller groups, as 2 and 2. He must understand eventually that these smaller groups may become part of a larger group by being combined, or added. In order to acquire these related and gradually expanding understandings, the child must have a series of planned and carefully related experiences.

One-to-one correspondence. Counting is the first step in gaining an understanding of numbers. Before the child is asked to count —to associate a number word with an object counted—he should have had previous experiences with one-to-one correspondence.

One-to-one correspondence consists of matching the objects of one group with related objects in another group; for example, matching chairs with children to see if there is a chair for each child. Not until a child has developed this ability can he associate a number name with an object to be enumerated.

Many of the children have probably come to understand one-to-one correspondence through experiences since early childhood. Here it is treated systematically in three related exercises, to make sure that the pupils see the relationship between groups of objects, such as children and toys, and can determine by matching or comparing objects that there is or is not a toy for each child.

The first step, finding that there is one-to-one correspondence between two equal groups, is treated on pages 1 and 2. The second step, which consists of matching the objects in one group with those in a larger group and discovering that there are more than are needed for one-to-one correspondence, is also treated on page 2. In the third step, which is presented on page 3, the children match the objects in one group with those in a smaller group and find that more are needed for one-to-one correspondence.

Counting. The process of rational counting consists of associating one, and only one, of the number words successively with one, and only one, in a group of things to be counted. The child must learn to use the word *one* as the first object is counted, the word *two* as the second object is counted, and so on.

In the early stages of learning, the number words necessary for counting lack meaning for children. Understanding comes with repeated experiences. It is likely that most children in the first grade can repeat the number words in sequence, but it is likely also that many of the children do so with little or no understanding. While training in counting may be necessary for only part of the group, it can be given to all as a means of enriching and extending their understanding of number meanings.

There are two basic ideas to be learned in rational counting. They are: (1) the last number used in counting tells how many objects were counted; (2) the order in which the objects are counted is not important, but the order of the numbers used in counting is important—it must always be the same.

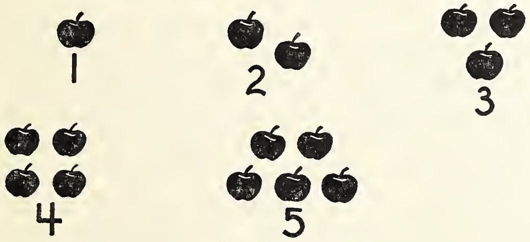
Cardinal meaning of numbers. Having learned to count, the children are ready to gain an increased understanding of the numbers they have used. They will learn about the numbers one to ten in the first section of their book.

It is sometimes assumed that when the children learn to use numbers in counting, they also learn what the words and the symbols mean. As a rule, this is not the case. These meanings must be developed before the pupils can use abstract symbols and number words with understanding.

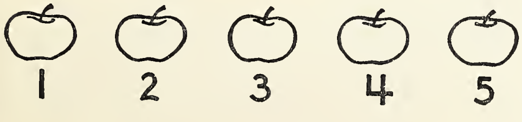
The pupils must learn that the symbols *1*, *2*, *3*, and so on, represent quantities, as three toys, or three animals. Number meanings must be developed one at a time, and a gradual transition made to the use of abstract symbols. Experiences with concrete materials and semiconcrete materials are needed to help the children attach meaning to the number words and symbols. Following such experiences the pupils will be able to think of abstract numbers as representing quantities. For example, the word *three* and the symbol *3* represent three things, as three cents, three pets, or three toys.

Children sometimes confuse the cardinal and ordinal meanings of numbers. Care must be taken in teaching to prevent this confusion. The cardinal, or quantitative, numbers tell how many are being considered, as 5 boys, 3 dolls, or 1 book. Ordinal numbers indicate position, as the *first* row, the *second* child, and so on. Both of these ideas are useful and will be taught. But the cardinal meaning should be emphasized first and clearly understood by the children before the ordinal meaning is developed.

In developing the cardinal meaning of numbers, care must be taken to show the quantity which the number represents, as:



In the illustration above, 5 clearly means 5 apples, or the quantity five. The pupils are almost certain to think of the 5 as representing the fifth apple in a series if the symbols are illustrated in this way:



The cardinal meaning of each of the numbers from 1 to 5 is developed in this section by providing experiences in (1) recognizing the number symbol, (2) identifying the number of objects the symbol represents, (3) creating a group of the indicated number of objects by drawing, (4) increasing the number of objects in a smaller group to make a group of the specified size, (5) decreasing the size of a larger group to make a smaller group of the size called for, (6) learning to write the number symbols, and (7) writing the symbols in functional counting situations. These experiences enrich understanding of the numbers.

Terms of comparison and position. Certain terms of comparison are essential to an understanding of arithmetic. The concepts of *more* and *as many as* are among those needed in comparing groups and numbers. These terms are introduced as part of the children's oral vocabulary of arithmetic in the first section of the pupil's book. The exercises in the pupil's book are designed to clarify the meaning of these terms without recourse to reading.

Various terms of position are useful also to the pupils in following directions, in locating material, and in carrying out learning procedures. The positional terms *top* and *bottom, left* and *right,* and *over* and *under* are typical of such terms. These words are introduced in this section as part of the pupil's oral vocabulary of arithmetic through exercises which do not require reading.

Identifying coins. In this section, the penny, nickel, and dime are identified, their value explained, and their relationships shown. The Teacher's Edition contains suggestions for concrete classroom activities for this purpose, and the pupil's book contains pictures of the coins which advance the concepts to the semiconcrete stage.

Making Sure. The first two of a series of "Making Sure" tests are provided on pages 20 and 21. The third test occurs on page 25, and the fourth and fifth tests on pages 40 and 41. These tests cover the major topics presented in the first section—counting to ten, writing the numbers 1 to 10, the terms developed orally in this section, and the meaning of the numbers from 1 to 10.

ONE-TO-ONE CORRESPONDENCE

Preparatory Activities

Page 1 provides an informal picture situation, the purpose of which is to help establish understanding of one-to-one correspondence. It gives the children an opportunity to discover, through matching, that the number of objects in one group is the same as the number of objects in another group.

Experiences with concrete objects. Before the children work with the semiconcrete (pictured) objects on page 1, they should be given experiences with concrete objects. At this time, there should be the same number of things in each group to be matched. These experiences are suggested:

Ask two children to go to the blackboard. Give another child two erasers and let him determine through one-to-one correspondence—matching, not counting—whether there is an eraser for each child. Then give another child two pieces of chalk. Let him discover in the same way that there is a piece for each child.

Have three children sit at a table. Give another child three napkins, another three cartons of milk, another three cookies, and so on. Let each child discover, through one-to-one correspondence, that he has enough so that each child at the table may have one.

Using Page 1

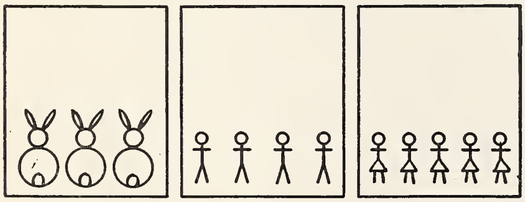
Let the children discuss the picture of the backyard play scene. Then ask the following questions and let the pupils find the answers by matching the objects in one group with those in the other.

Is there a buggy for each doll to ride in? Is there a chair at the table for each girl to sit in? Are there enough wheels for the wagon? Are there enough glasses of lemonade for each child to have one?

Follow-up Activities

Additional learning helps. If some children need additional help in understanding one-to-one correspondence after they have used page 1 of the pupil's book, they should be given more experiences with concrete materials. Then semiconcrete experiences may be provided.

The teacher may prepare mimeographed exercises, such as the following, which give the children an opportunity to make responses by drawing.



Have the children draw a carrot for each rabbit, a kite for each boy, and a balloon for each girl.

Pictures of children's activities may be cut from magazines, and the children asked to discover by one-to-one correspondence if, for example, there is a swing for each child, a wagon for each boy, a hat for each girl, and so on.

Enrichment activities. The children who do not need additional help with one-to-one correspondence should not be required to participate in the additional learning activities, but should be given enrichment activities which will stimulate and broaden their interest in arithmetic. For example, they may enjoy finding in magazines pictures which can be used for matching experiences, as pictures of children and toys, pictures of pets and their houses, pictures of cowboys and horses, and so on. The pictures they find may be placed on the arithmetic game table for use by others who need additional experience in one-to-one correspondence.

One-to-One Correspondence (continued)

Preparatory Activities

The first two exercises on page 2 provide more experience in one-to-one correspondence where the groups to be matched have the same number of objects in them. The next learning step is to match the objects in one group with those in a larger group. This type of one-to-one correspondence is provided in the last two exercises on the page.

Using concrete materials. Before the children work with page 2, they should be given experiences with concrete materials. The following are suggested:

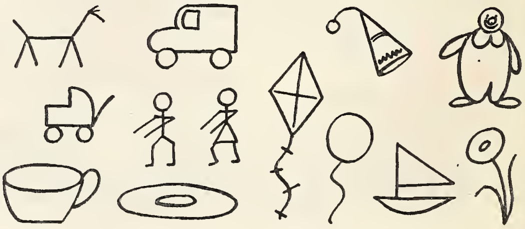
Seat a group of six children at a reading table. Give another child a stack of seven or eight books to distribute. Ask if there is a book for each child, and let the child with the books discover by matching that there are more books than are needed.

Arrange eight chairs in a circle. Call the names of six or seven children to sit in the chairs. Let them discover that there are more chairs than children.

Kinesthetic responses. Mimeographed exercises, such as a picture of eight girls and ten dolls, may be provided. The children draw lines from each girl to a doll, and discover that there are more than enough dolls for each girl to have one.

Similar exercises may show boys and balloons, ponies and wagons, cups and saucers, clowns and hats, etc.

In preparing the exercises, the teacher need not feel that the art work must be of the standard found in published materials. Simple line drawings such as the following are acceptable to children.



Using Page 2

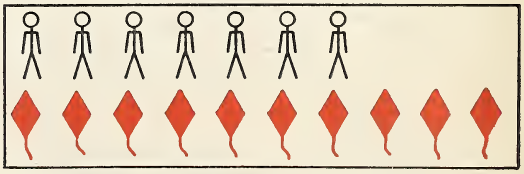
After the children have identified all of the toys, call attention to the first picture and ask, "Is there a trailer for each jeep?" The children find the answer by drawing a line from each jeep to a trailer.

Use the same procedure for the remaining exercises, and let the children discover by drawing lines that there are enough tractors for the drivers; there are more than enough horses for each cowboy to have one; and there are more than enough garages for the cars.

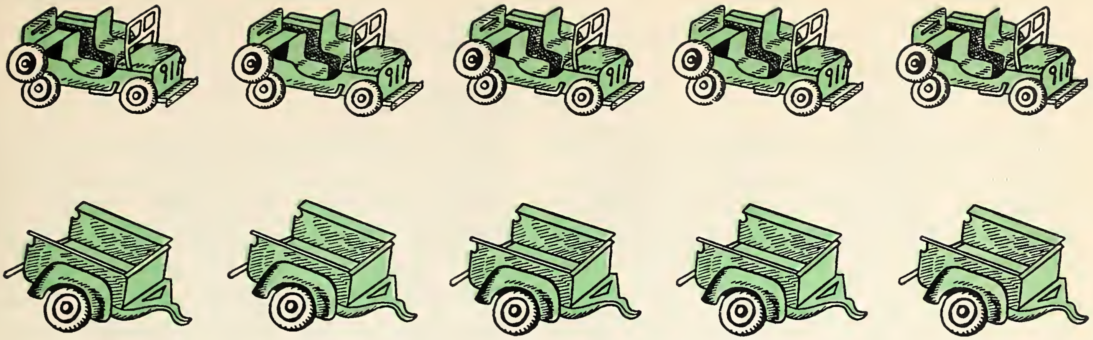
Follow-up Activities

Additional learning helps. If some pupils failed to understand the type of one-to-one correspondence presented on page 2, they should be given more experiences of the kind suggested for preparatory activities.

It may be helpful also to provide blackboard experiences similar to those in the pupil's book. For example, draw a picture of seven stick figures and ten kites. Have a child discover, by drawing lines from each stick figure to a kite, that there are more kites than are needed. The exercise may be repeated with such objects as wagons and goats, girls and balls, clowns and hats, until each child who needs help has had an opportunity to respond.



Enrichment activities. The children who do not need further help with one-to-one correspondence may do other things that interest them while the teacher works with the children who need assistance.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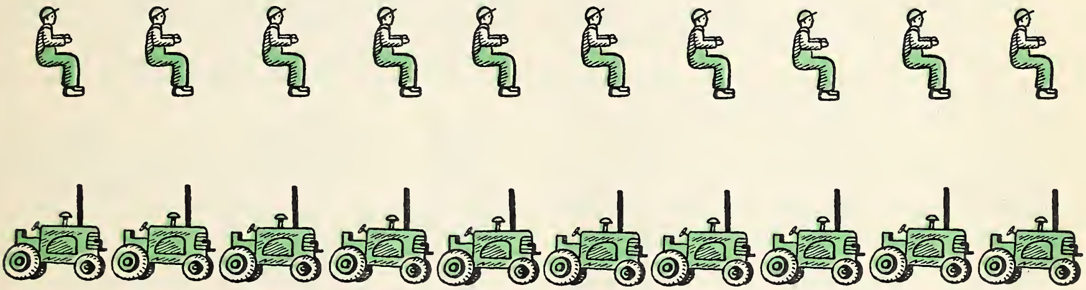
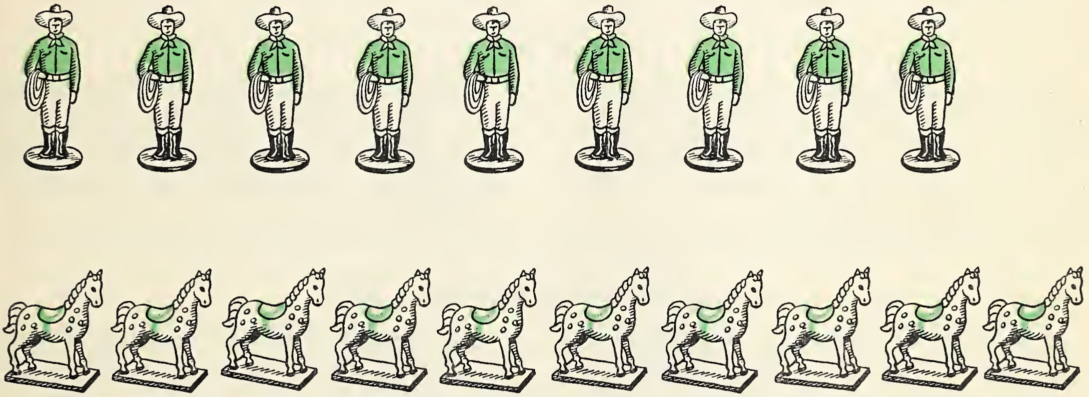
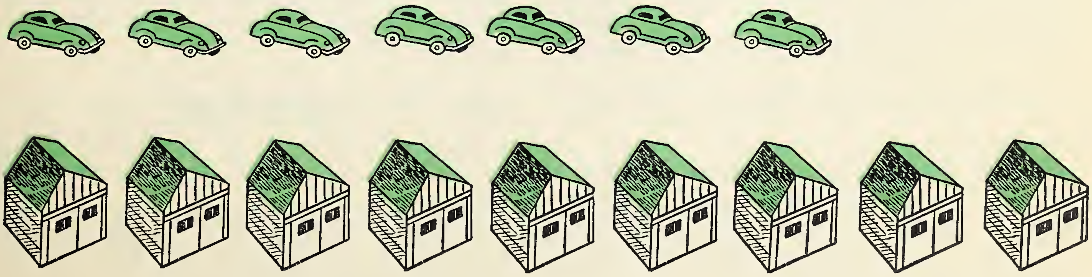






One-to-One Correspondence (continued)

Preparatory Activities

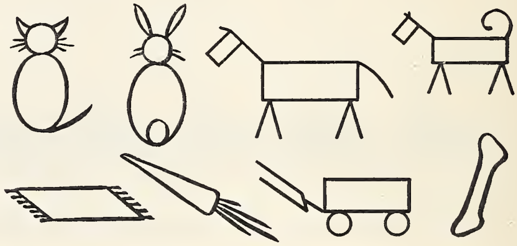
The children are now ready for the third type of experience with one-to-one correspondence. On page 3, exercises are provided in which there are not enough objects to match one-to-one with the related series of objects. The children draw more objects so that there are enough. When they finish this page, the children will have had experiences with all groups from 2 to 10.

Using concrete objects. The following or similar activities may be used to provide concrete experiences.

Divide the class into groups of six to ten children. Give one child in each group pencils, rulers, or books for his group. In each case, the child should be given fewer objects than there are children in the group. After the child has distributed the objects and discovered that there are not enough, ask him to get more so that there is one for each child.

Demonstrating use of book. The teacher may demonstrate at the blackboard the procedure to be followed in the pupil's book. She may, for example, draw five kittens and two rugs, and then ask, "Is there a rug for each kitten?" When the children discover that there are not enough rugs, a child may draw more so that there are enough for each kitten to have one.

The experience may be repeated with other drawings of pets, as rabbits and carrots, puppies and bones, ponies and wagons, etc. Simple line drawings may be used, as:



Using Page 3

After the children have discussed the pictures, draw attention to the first picture and say, "Are there enough balls so that each boy may have one? Draw more balls so that there is one for each boy."

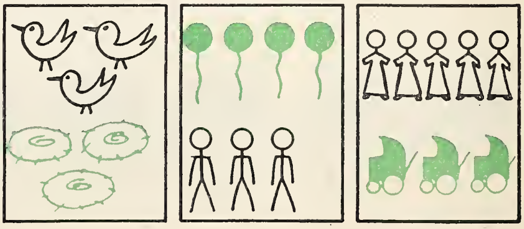
Repeat the procedure for the second picture. For the third picture, the pupils are to draw all of the balls—enough so that each of the children in the picture may have one, or 4 balls in all.

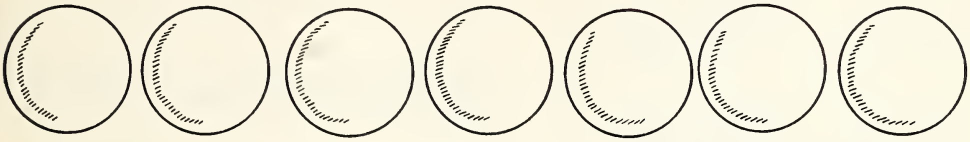
Follow-up Activities

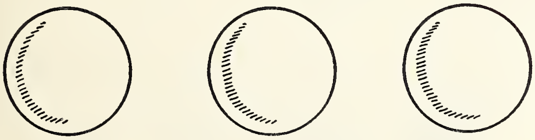
Additional learning helps. If some of the pupils had difficulty with page 3, small objects such as blocks may be used to give additional help. For example, each child may place on his desk a group of blocks. The teacher places another group with fewer blocks on the desk. The child matches them one-to-one, then places more blocks on his desk until he has as many in the second group as in the first.

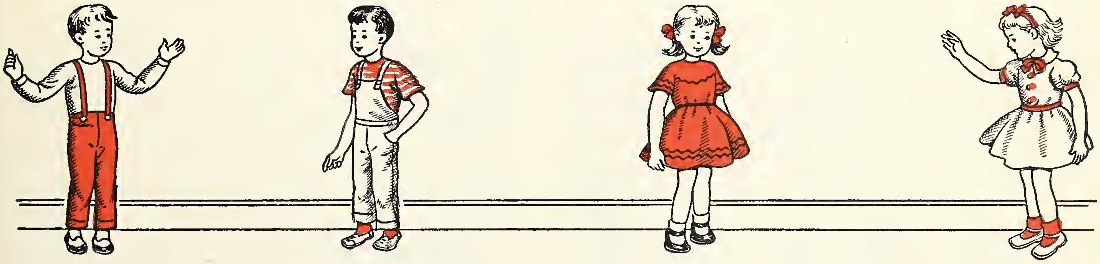
To vary the experience, the teacher may place on the desk more objects than the child has in his group of objects. The child then removes some of the objects so there are just enough to match his group.

Enrichment activities. Children who need no additional help may be given activities to summarize their experiences with one-to-one correspondence. For example, they may make cards such as those below to illustrate the three types of experience that have been provided.









RATIONAL COUNTING TO TEN

Preparatory Activities

Many of the children may need only a brief reteaching of rational counting, while others may need repeated experiences. Some children may need help in pronouncing the words or in understanding that each number word, in turn, applies to another object in the group being counted. The teacher should determine which children need help and what their specific needs are. The exercises on page 4 are designed for this purpose.

Counting concrete objects. There are many classroom activities in which counting serves a useful purpose, and such activities should be used at every opportunity rather than those which the children recognize as unnecessary. Among the counting experiences which may be employed are the following:

Counting the materials that are needed for each row or small group of children, as scissors, rulers, books, sheets of paper, pencils, crayons.

Counting the bottles of milk needed at each table for mid-morning lunch.

Counting the nickels, pennies, or dimes that have been contributed for various purposes and arranging them in stacks of ten coins of the same kind.

Finger plays. The children will also enjoy finger plays set to nursery rhymes. They touch one finger at a time, or open their hands one finger at a time, as they say such rhymes as:

> "One, two, three, four, five,
> I caught a hare alive.
> Six, seven, eight, nine, ten,
> I let it go again."
>
> "One, two, buckle my shoe;
> Three, four, knock at the door;
> Five, six, pick up sticks;
> Seven, eight, lay them straight;
> Nine, ten, a good fat hen."

Using Page 4

Call attention to the pictures of toys and have the children name the toys in each group. Then have them count to find how many there are of each toy.

As the children count, watch carefully to see that each child touches one toy and only one as he enumerates them. Listen also to see that the number words are pronounced correctly and are used in sequence.

This exercise will enable the teacher to find which children, if any, need additional experiences with rational counting.

Follow-up Activities

Additional learning helps. If some of the children had trouble with counting on page 4, the teacher should work with them individually or in small groups in order to find the specific difficulty.

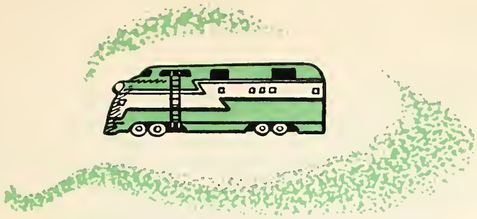
If the problem is vocabulary, the teacher will help the children learn to pronounce the number words in sequence. This may be accomplished by repetition of experiences in counting, by saying number rhymes, etc.

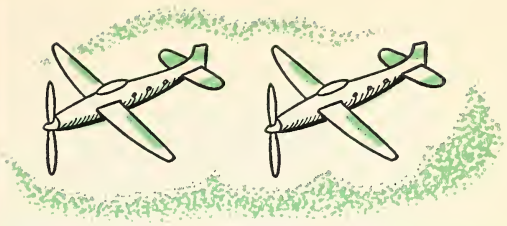
If the problem is enumeration, small concrete objects, such as blocks, pegs, bottle caps, buttons, or acorns, are very useful. Small groups of children who need help can work at the same time, touching one object after another as they enumerate them.

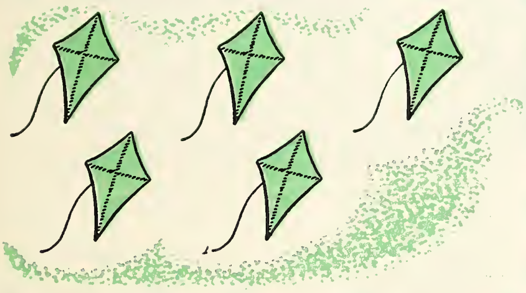
The teacher may find it helpful also to provide magazine pictures of toys, children, animals, etc., that can be counted.

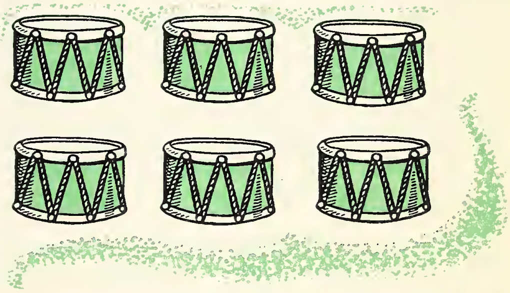
Enrichment activities. Those children who do not need additional experiences in counting may find it interesting to cut from discarded magazines pictures of things that can be counted.

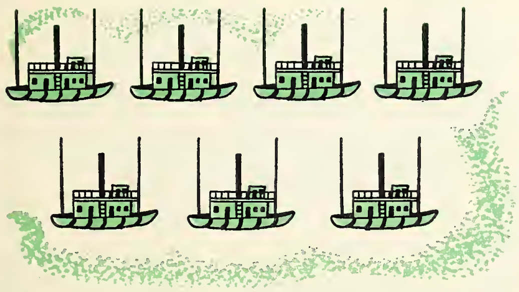
These pictures may be pasted in scrapbooks, hung on the bulletin board, or placed on the arithmetic game table where other children who need practice may use them.

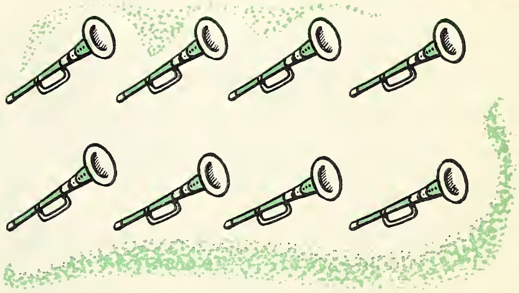


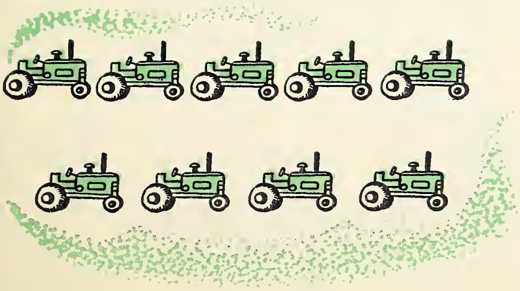


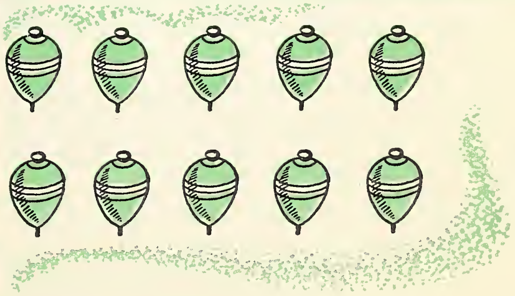












TERMS OF COMPARISON: *MORE* AND *AS MANY AS*

Preparatory Activities

The terms *more* and *as many as* are necessary to an understanding of the quantitative aspect of numbers. Some understanding of the terms may have been gained from experiences with one-to-one correspondence. A fuller meaning of the terms will be developed as the children work with the exercises on page 5.

Concrete experiences. Many classroom activities provide opportunities to develop the meaning of the terms *more* and *as many as,* and the teacher should take advantage of them. The teacher may find activities such as the following to be especially suitable for developing the meaning of the terms in realistic situations.

Count the children at the table. Then count the books. Are there more children than books?

Count the children who want to swing. Then count the swings. Are there more children than swings?

Count the children on Team One. Count the children on Team Two. Are there as many on Team One as there are on Team Two?

Count the crayons in each box. Are there as many in one box as in the other?

Count the pictures on the bulletin board. Then count the pictures on the wall. Are there as many on the bulletin board as there are on the wall?

Using Page 5

Call attention to the two tanks of fish. Have the children find the tank that has more fish in it. Have them put a circle around that tank.

Call attention to the baskets of kittens. Have the children put a circle around the basket that has more kittens in it.

Call attention to the ducks on the pond and those in the tub. Develop the concept that there are as many ducks on the pond as there are in the tub.

In the last exercise, have the children draw as many eggs in the white dish as there are in the green dish.

Follow-up Activities

Additional learning helps. If the responses on page 5 indicate that some of the children still do not understand the terms *more* and *as many as,* they may be given experiences such as the following:

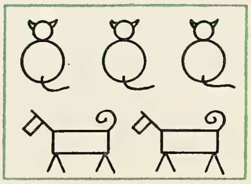
Arrange a group of three boys at one side of the room and a group of four or five boys near them. Ask the pupils to tell how many boys are in each group and which group has more boys in it.

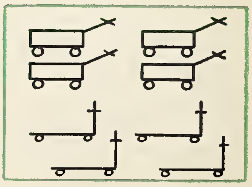
Repeat the activity with two groups of girls, two stacks of books, etc. Compare a group of boys and a group of girls. Use a group of boys and a stack of books to find if there are more books than boys.

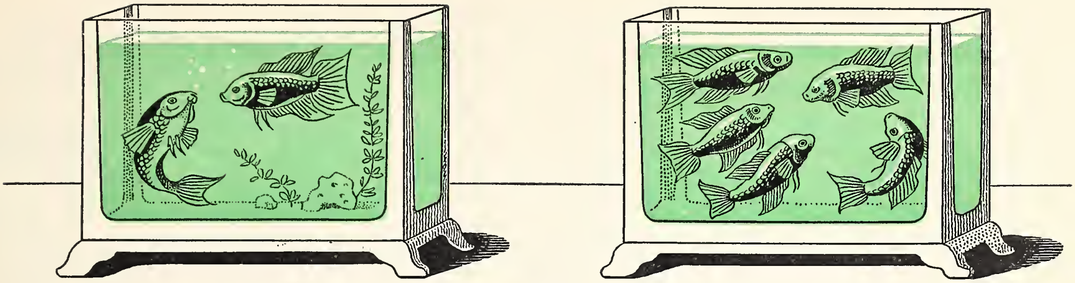
Develop the concept of *as many as* in the same way.

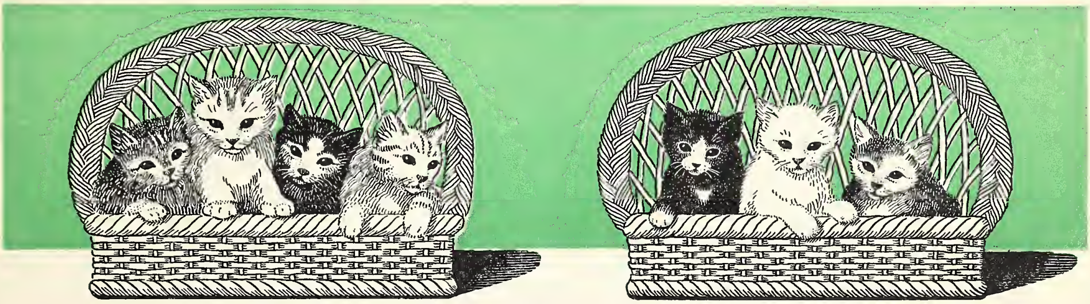
Experiences may be provided also with pictures from magazines or books. For example, pictures of pets may be shown and the children asked to count to find if there are more puppies than kittens, etc.

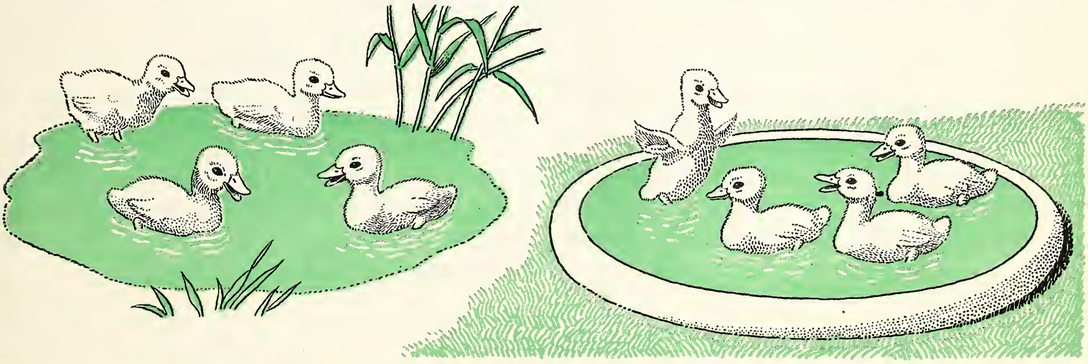
Enrichment activities. The children who do not need additional help with the terms *more* and *as many as* may make pictures for their scrapbooks or the bulletin board. One picture may show two groups of pets, one of which has more pets in it than the other. Another picture may show two groups of toys, one of which has as many in it as the other.

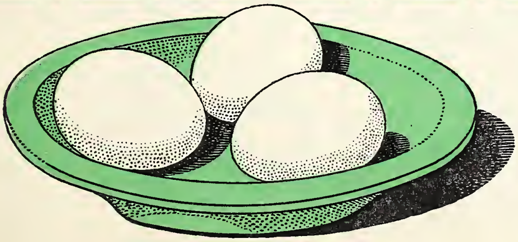


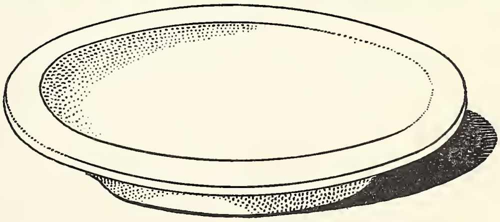












LEARNING ABOUT THE NUMBER ONE

Preparatory Activities

Many of the children may understand the meaning of the number *1*. Others will need to attach meaning to the word, learn that the symbol *1* means one thing, and associate the word with the symbol. Page 6 provides exercises which will help the children gain these understandings.

Providing realistic experiences. In developing number meanings, realistic experiences should be provided before the pupils are given the exercises in their books. Concrete materials, semiconcrete materials, and kinesthetic responses are suggested.

Several single objects and groups of two, three, and four objects may be placed on a table, as one book and two books, one crayon and three crayons, etc. Ask various children to point out the one single object of each kind. Then write the symbol *1* on the blackboard and explain that it means one thing, as one ball, one book, or one boy.

Provide pictures showing groups of toys, animals, or children and pictures showing one animal, one toy, or one child, and have the children identify the pictures that show one thing only. Then ask them to point to one thing in each of the pictures of groups.

Ask several children to tap one time, to clap one time, to bounce a ball one time. Have them raise one hand, swing one foot, or hop one time.

The children should be helped to associate the number *1* with events and experiences in their lives. For example, in the afternoon school begins at 1 o'clock; some of the children have one sister or one brother; the baby may be one year old; some stamps cost one cent; and so on.

Using Page 6

Call attention to the symbol *1* and the broken line from the *1* to the picture of Peter Rabbit. Have the children trace the line with their pencils, and then find each of the other pictures that shows one thing and draw a line from the *1* to that picture.

Next, ask the pupils to find the picture having a dotted line around one rabbit and trace the line. Have them make a line around one pig in the next picture and around one kitten in the last picture.

The children are to practise writing the symbol *1* in the boxes. Explain that the arrow shows where to begin, and the dotted lines show how to make the *1*. Have the children trace the models, then write a *1* in each of the other boxes.

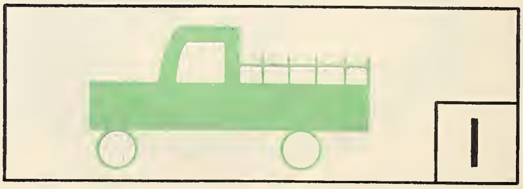
Next, ask how many hens there are in the picture at the left. Have the children write the number on the black line by the hen. Repeat for the next picture. Have them draw one animal or one ball in the red box.

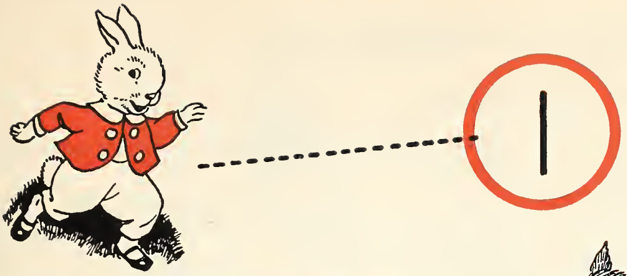
Follow-up Activities

Additional learning helps. If some children failed to understand the directions on page 6, the teacher should go over the page with them. The same procedures will be used again on succeeding pages, and time will be saved if errors are identified and corrected at this time.

If some children need more help in understanding the meaning of the number *1*, the suggestions for preparatory activities may be used again. It may help also to have them find pictures that show one thing.

Enrichment activities. The children who do not need help from the teacher may draw or cut from a magazine a picture of one toy, or one animal, and write beside it the symbol *1*.

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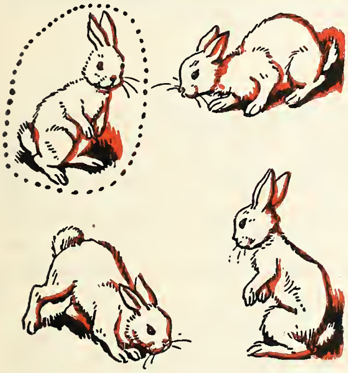
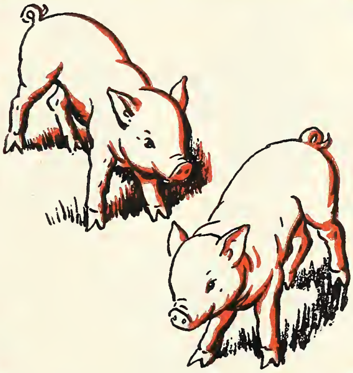
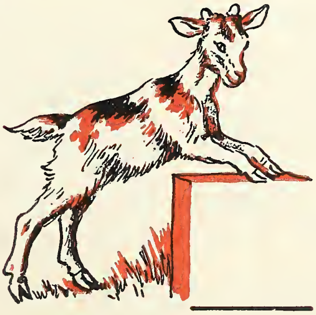






LEARNING ABOUT THE NUMBER TWO

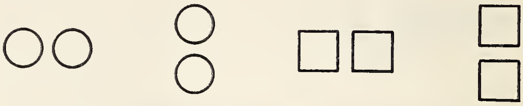
Preparatory Activities

The exercises on page 7 are designed to help the children gain a deeper understanding of the number 2 and its relationship to the number *1.*

Using concrete materials. Before the children work with page 7 in their books, they should be given experiences with concrete materials. For example, have two girls stand near the reading table and one girl near the teacher's desk. Have two boys go to the back of the room and one boy to the front of the room. Ask the pupils to identify the groups of two.

Write the symbol 2 on the blackboard and explain that it means two of something, as two boys, two boxes, two children.

Have the pupils place blocks, pegs, or crayons on their desks in groups of two each. Have them draw designs on the blackboard, using circles, squares, etc., in these arrangements:



Place one of each of several objects on a table and ask various children to put more with them so that there are two of each thing on the table.

Associating the number with common experience. Help the children to recognize the significance of 2 by associating it with such common experiences as the following:

We wear two mittens, two shoes, two socks, but only one hat, one coat, one tie.

We have two eyes, two hands, two feet, two ears, but only one head and one nose.

Using Page 7

Have the pupils draw a line from the number 2 to each picture that shows two things.

In the next exercise, have them draw two balls. Then tell them to draw what is needed in the second box so that there will be two balls in that box.

In the third exercise, have the pupils find the picture of hats and trace the dotted line around two of the hats. Then have them draw a line around two of the doll coats and around two of the doll purses.

It is advisable to demonstrate at the blackboard the proper way to write 2. Then have the children find the arrow by the first dotted model in their books, and explain that it shows where to begin to write the 2. Have them trace the two models and then write 2 in each of the remaining boxes.

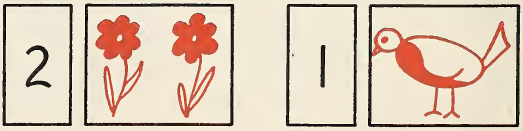
In the exercise at the bottom of the page, have the pupils write on the black lines the numbers that tell how many things there are in each picture.

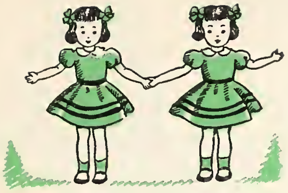
Follow-up Activities

Additional learning helps. If some of the pupils need more experiences with concrete and semiconcrete materials after they have used page 7, the teacher may ask them to find or draw pictures that have two toys, two animals, or two children in them.

If some children need help in writing the symbol 2, they may be given large models to trace at the blackboard.

Enrichment activities. The children who do not need additional help in understanding the number 2 may make illustrated cards to be used in a matching game. One set of cards may have pictures of one or two objects on each card. Another set may have the symbol *1* or *2* on each card. The children then match the numbers with the pictures.





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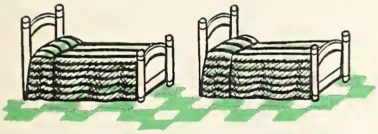

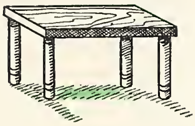

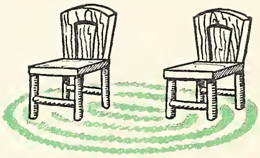

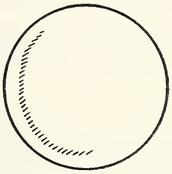

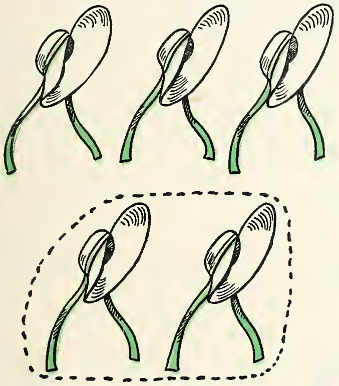

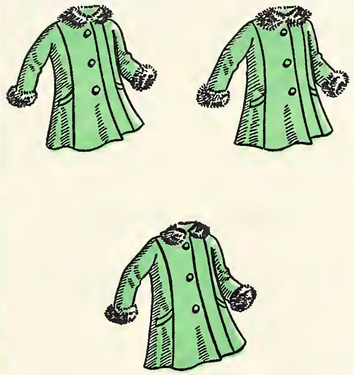

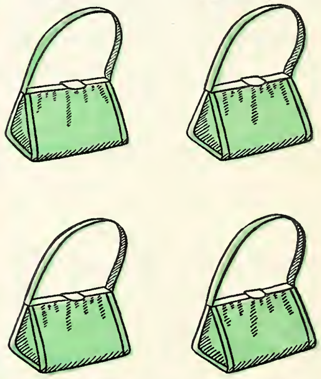

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POSITIONAL TERMS: *TOP* AND *BOTTOM*

Preparatory Activities

Although the pupils may know and use the words *top* and *bottom*, many of them may have only a vague idea of their meaning, and may not be able to use them in finding materials on a page or in following directions. The terms are introduced on page 8 so that early in the year they will become a useful part of the pupils' oral vocabulary.

Classroom activities. The terms *top* and *bottom* should be introduced in realistic and functional situations such as those suggested below:

Help the children identify the top and bottom of the blackboard, the top and bottom of a picture in the room, the top and bottom steps of a stairway, the top and bottom of a sheet of paper.

Have the children make a tower of blocks with a large block at the bottom and a small block at the top.

Have each child draw one toy at the top of a piece of paper and two toys at the bottom.

Have the children look at page 7 in their arithmetic books. Let them tell what is at the top of the page and what is at the bottom of the page.

Using Page 8

Have the children tell what they see at the top and at the bottom of the page. Call attention to the page number at the bottom.

Have them find the picture of the firemen. Tell them to put a line around the fireman at the top of the ladder and an X by the fireman at the bottom of the ladder.

Call attention to the picture of the toy animals. Have the children put a line around the animal on the top shelf and an X beside the animal on the bottom shelf.

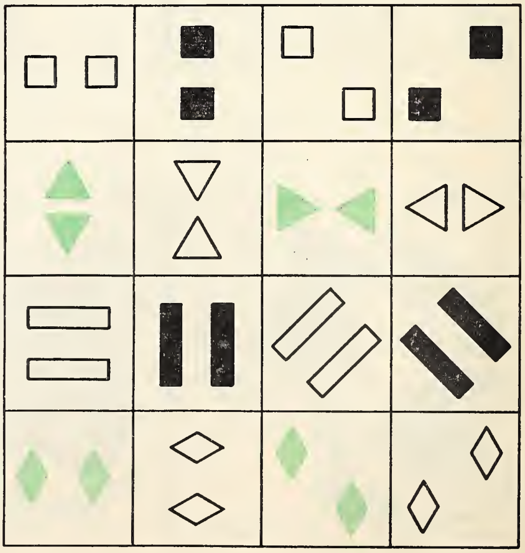
Direct the children to draw a hill in the box at the bottom of the page. Have them begin at the bottom of the box. Tell them to put a house on the top of the hill and a tree at the bottom of the hill.

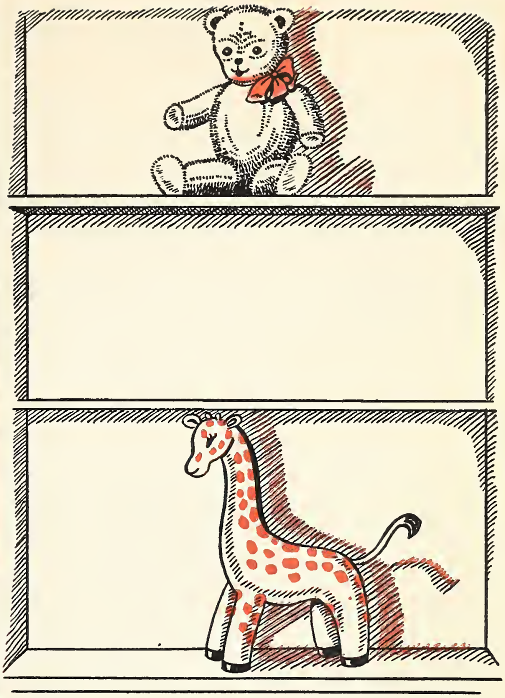
Follow-up Activities

Additional learning helps. Some of the pupils may need more help with the terms *top* and *bottom.* Since these terms will be used frequently in oral directions for the workbook pages, the additional help should be directly related to use of the terms with book pages or sheets of work paper. For example, the children may be asked to tell what pictures are at the top and at the bottom of a page as well as what objects are at the top and at the bottom of a specific illustration in their books.

The children may be asked also to draw a picture at the top of a piece of paper and another at the bottom of the paper.

Enrichment activities. Those children who do not need additional help with the terms *top* and *bottom* may be allowed to find other things to do. They may enjoy making folders from 9″ x 12″ art paper to keep their arithmetic work in. A design with alternating groups of two objects, as pictured below, might be used to decorate the folders.





LEARNING ABOUT THE NUMBER THREE

Preparatory Activities

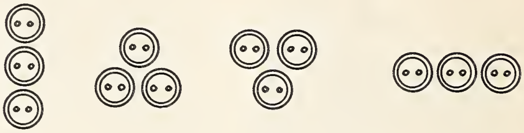
Page 9 is the first of three pages devoted to helping the children learn about the number 3. As the children identify groups of three objects, the relationships among one, two, and three are shown incidentally.

Using concrete materials. Activities stemming from classroom situations may be supplemented by the following suggestions for learning more about the number 3.

Several groups of objects, as books, blocks, toys, and crayons, may be arranged on a table. Among these should be some groups of two, three, four, and five objects. As the children identify several of the groups that have three things in them, the teacher should write the symbol 3 on the blackboard and explain that it means three things, as three books, three pencils, etc. Several children may then be asked to identify all of the groups of three and name them, as "three crayons," "three blocks," and so on.

Next, the children may identify and name the groups of two, as "two dolls." Finally, they should identify and name the single objects, as "one pencil."

The children may line up in groups of three each to demonstrate what the number means. They may also make groups of three small objects, as buttons, pegs, or bottle caps, arranging them in as many different patterns as possible.



Kinesthetic responses. The children may clap in rhythmic pattern and count 1–2–3, 1–2–3, 1–2–3 as they clap.

The teacher may tap or bounce a ball as the children listen. Sometimes there will be two sounds, sometimes one, and sometimes three. The children say "Three" when they hear three sounds.

Functional use of the number. The children should be helped also to associate the number 3 with everyday experiences, as: There are three wheels on a tricycle and on an airplane. There are three sides on a triangle. Some stamps cost three cents. The school bus leaves at three o'clock.

Many stories and poems use the word *three*, as *The Three Bears*, *The Three Billy Goats Gruff*, *The Three Little Pigs*.

Using Page 9

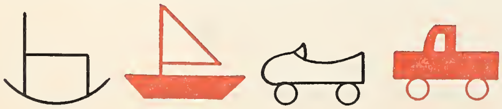
Explain that the animals pictured on page 9 are all zoo animals. Help the children to identify the elephants, deer, giraffes, lions, zebras, and camel.

Call attention to the symbol 3 and ask the children to draw a line from the 3 to each group that has three animals in it.

In the box at the bottom of the page, have the children draw three animals. If they find drawing tedious, they may draw balls or blocks or eggs, or they may make X's and pretend they are animals.

Follow-up Activities

Additional learning helps. If there are any children who had difficulty with page 9, it may be helpful to have them make pictures of three toys, using simple line drawings.



Enrichment activities. Those children who do not need additional help from the teacher may be asked to find in discarded magazines pictures that show three things. These pictures may be placed on the arithmetic game table to be used as the children have additional experiences with the number three.

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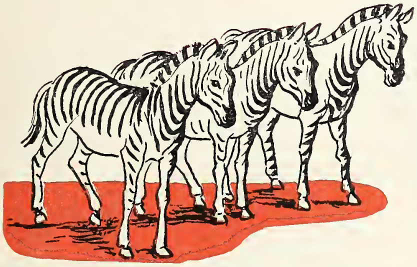


Learning about the Number Three (continued)

Preparatory Activities

The exercises on page 10 provide other types of experience with the number 3. On this page the children increase groups to make groups of three and find groups of three within larger groups.

Using concrete materials. Experiences with concrete materials should be provided before the pupils are given the exercises in their books. The following are suggested:

Place one chair at the front of the room and ask the children to bring more chairs so there will be three.

Place two books on a table and ask a child to increase the group so there will be three books on the table.

Ask the children to place one small object, as a block or a crayon, on their desks. Then have them place enough more objects on their desks so they have three of each.

Next, have them put two objects on their desks, then increase the number so there will be three.

Arrange in the front of the room four books, five chairs, and six toys. Have the pupils remove enough from each group so there will be three remaining.

These experiences may be repeated with small objects. The pupils place four objects on their desks, then remove all but three objects. Then they place five objects on their desks and remove all but three. And finally they place six objects on their desks and remove enough so that only three remain.

In addition to helping the children understand the number 3, these experiences help them understand the relationship between three and each of the numbers from one to six.

Using Page 10

In the exercise at the top of the page, have the pupils draw more balloons so there will be three balloons in each picture.

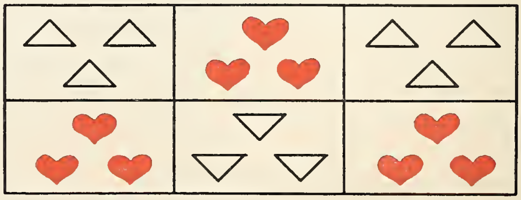
In the next exercise, help the children to identify the animals as monkeys, tigers, and bears. Have them trace the dotted line around the three monkeys. Then direct them to put a line around three of the tigers and another line around three of the bears, just as they did with the monkeys.

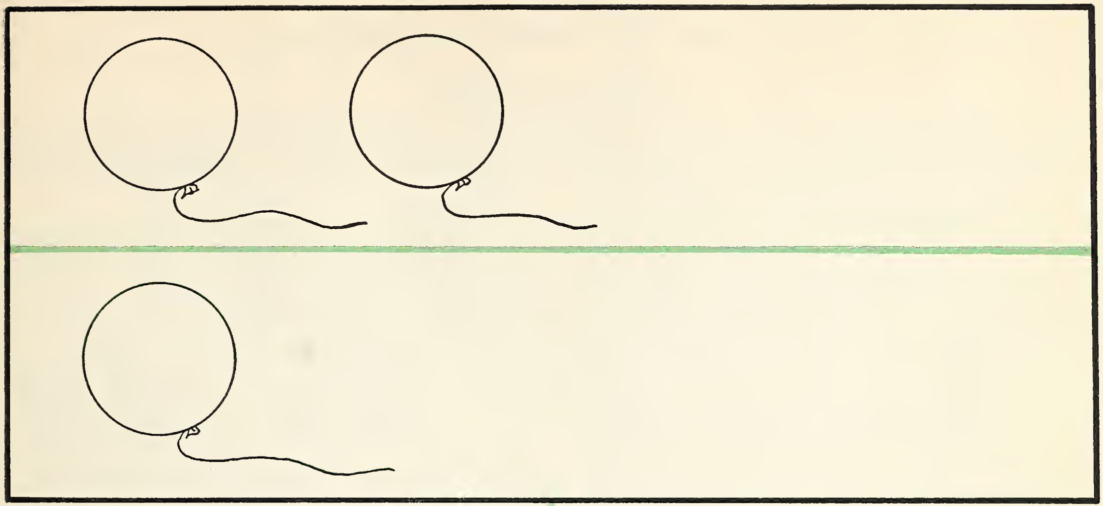
Follow-up Activities

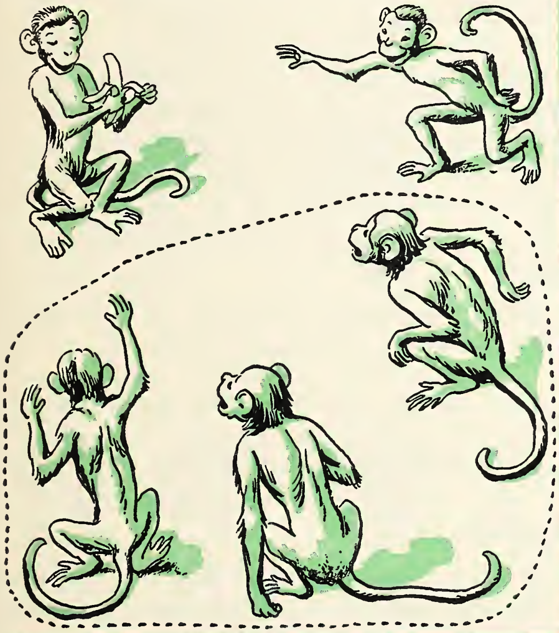
Additional learning helps. If some of the pupils had difficulty with the exercises on page 10, they should be given group or individual assistance to help them understand the procedure. For example, have them draw one square, one circle, or one triangle on the blackboard. Then ask them to draw more so there are three squares or circles or triangles. Next, have them draw two objects and increase the group to three objects by drawing.

Put on the blackboard several pictures of toys in groups of four, five, and six. Ask the children to draw a line around three toys in each group. Repeat the exercise until all of the children understand exactly how many a group of three is.

Enrichment activities. Those children who do not need help from the teacher should be allowed to work at some activity of their own choosing. Or they may make a picture of three animals or three toys for their scrapbooks or arithmetic folders. Some of them may enjoy making a page of designs with the pattern made up of groups of three objects, as:







Learning about the Number Three (continued)

Preparatory Activities

The exercises on page 11 will help the pupils learn to write the symbol *3* and to use it to indicate the number of objects in a group. Understanding of the relationships between the numbers 1 and 3 and 2 and 3 is developed further as the children identify single objects and groups of two as well as groups of three objects. The exercises also give practice in writing the numbers *1* and *2*.

Practice in writing the number. The figure *3* is one of the most difficult for children to learn to write. Consequently it is desirable to provide practice at the blackboard before the children are asked to write it in their books. The teacher should first demonstrate the writing of *3*, showing the children where to begin and the direction to follow. It is helpful also to have the pupils pretend to write a large *3* in the air. Models to be traced on the blackboard should then be provided. For this exercise, the teacher may choose those children who lack skill in writing.

Pictures of objects that have been cut from magazines or pictures which the children have made for their scrapbooks may now be used to demonstrate the next step. The teacher first holds up a picture with one object on it, as an airplane, a toy, or an animal, and the children write the number that tells how many things there are in the picture. Then pictures of two and three things may be displayed to give the pupils the opportunity to write each number several times.

As the children write, the teacher should observe them closely to find which children need help in writing the numbers *1*, *2*, and *3*. It is especially important to detect and correct any tendency to reverse the *2* or the *3* before the habit becomes fixed.

Using Page 11

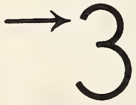
If the procedure suggested above has been followed, all of the children should be ready to work with the exercises on page 11. The teacher should call attention to the symbol *3* and explain again that the arrow in the first dotted model shows where to begin to write the *3*. The children then trace the two models and write *3* in the other boxes.

Help the children identify the animals in each picture. Then have them write on the black line the number that tells how many animals there are in that picture.

Follow-up Activities

Additional learning helps. If some of the pupils had difficulty in writing the *3*, the teacher should work with them individually until they learn to do it correctly. The procedures suggested for preparatory activities may be used.

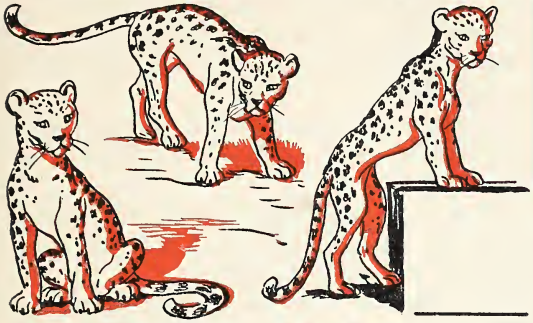
In the case of a tendency to reverse the *3*, it may help to have the child draw an arrow to show which way he is to go, as:

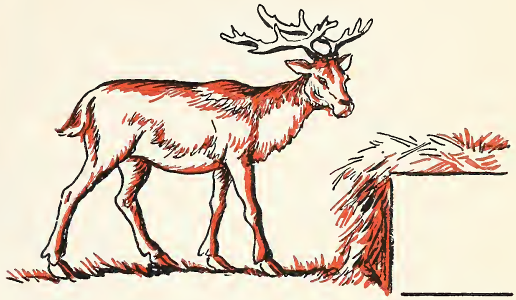


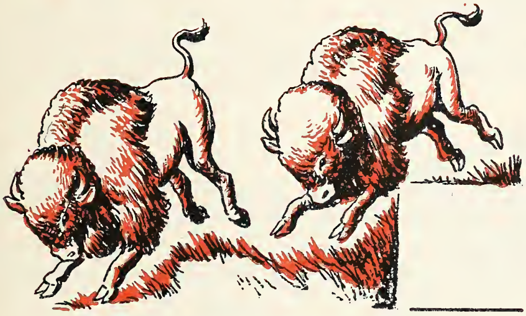
Or a large *3* with a directional arrow may be written on the blackboard and left there for reference. Supervised practice is probably the best help, since it enables the teacher to work with each child until he learns to write the figure correctly.

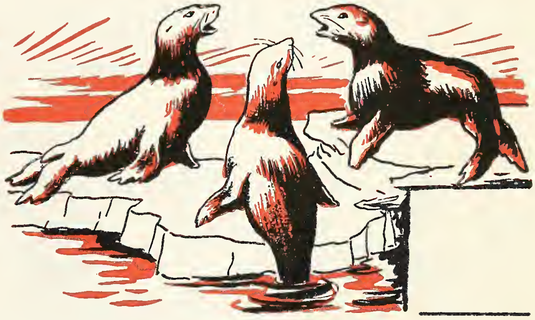
Enrichment activities. If the faster learners started a matching game with the numbers *1* and *2*, they may now make illustrated cards for the *3* and small cards with the symbol on them, as:

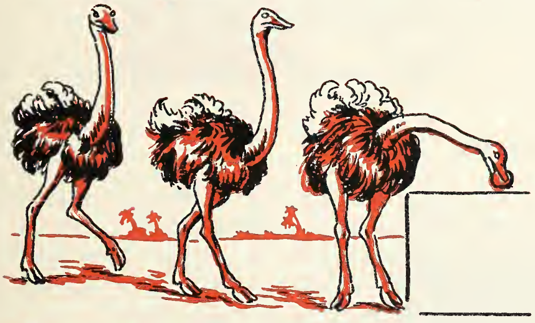
3	3	3				

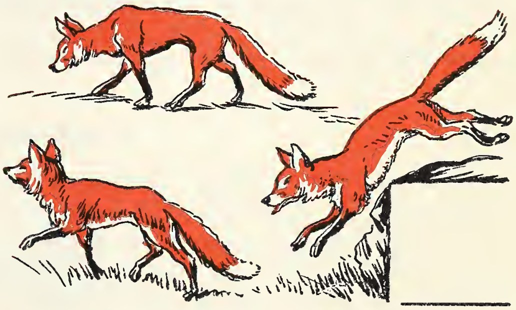


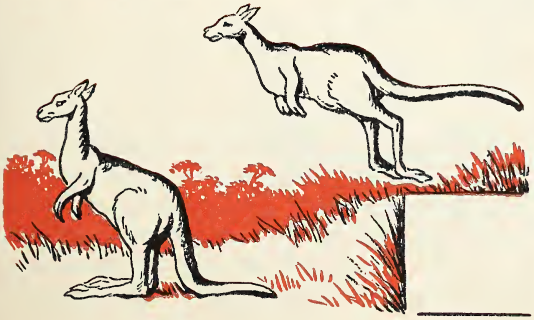


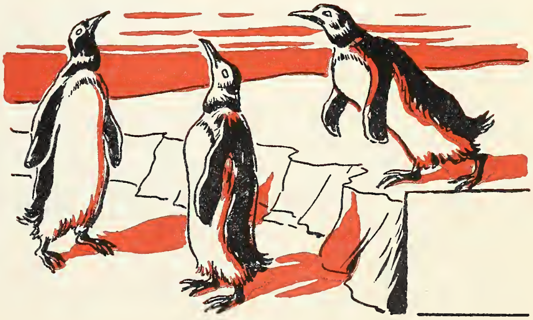












POSITIONAL TERMS: *LEFT* AND *RIGHT*

Preparatory Activities

The terms *left* and *right* may be clearly understood by some pupils. Others may have no understanding of them. Since the terms serve useful purposes in the arithmetic program, the children should develop clear concepts of them at this time. The exercises on page 12 provide for this development.

Using concrete situations. The terms *left* and *right* can be introduced most effectively in actual classroom activities. For example, we use the right hand to salute the flag and to shake hands. We keep to the right when walking in a corridor or on the sidewalk. We read from left to right. We begin at the left side of our paper when writing. These and similar uses of the terms may be noted.

After the terms have been introduced in realistic situations, experiences such as the following should be provided to help the children use the terms in the way they will be needed.

Direct the children to find the picture on the left side of a page, then the picture on the right side.

Show a large picture with several children in it and have the pupils find the child at the left and the one at the right.

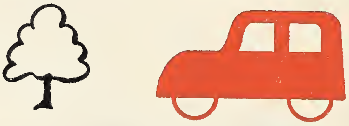
Give the children small objects, such as blocks or crayons. Ask them to place three of the objects on the left side of their desks and two on the right side, then one on the left and two on the right, etc.

Using Page 12

Discuss the picture of the girl holding the flags. Ask the color of the flag in her left hand and the color of the flag in her right hand. Have the pupils put an X by the flag in the girl's left hand and a line around the flag in her right hand.

In the next picture, have the pupils put an X by the goat at the left and a line around the goat at the right.

At the bottom of the page, have the pupils draw a tree at the left and a car at the right of the house. Models such as the following may be drawn on the blackboard to help them.



Follow-up Activities

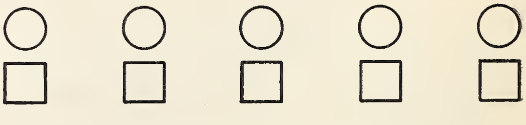
Additional learning helps. If some of the children did not understand the terms *left* and *right* well enough to do the exercises on page 12, they should be given additional experiences of the kind suggested for preparatory activities.

Kinesthetic responses such as the following are effective also in helping the children understand the terms.

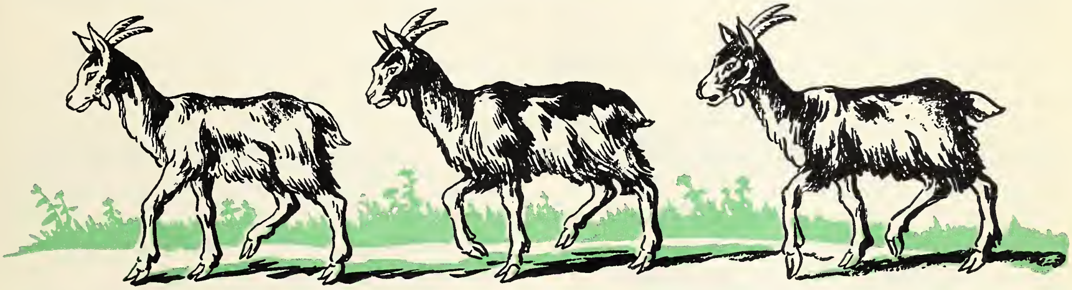
Have the children march around the room saying, "left," "right," "left," "right," as they march. At the same time, they may make up and down strokes with the left and right hands alternating as they march.

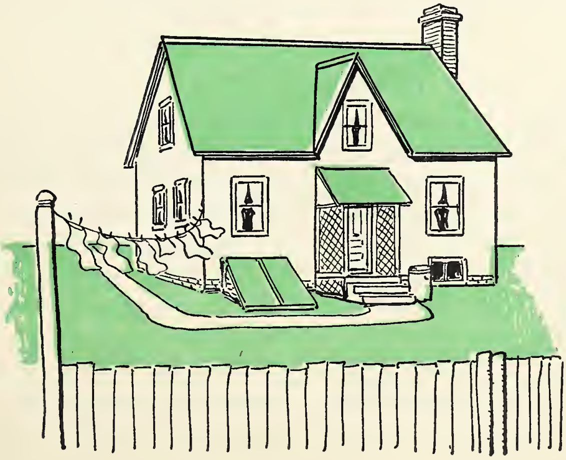
The singing game *Looby Loo* is another excellent activity for teaching the terms *left* and *right*.

The children may be given an exercise with two or three rows of outline drawings of toys, animals, squares, or circles. They color the object at the left in each row red and the object at the right in each row green.



Enrichment activities. The children who do not need help with the terms may be asked to look in discarded magazines for pictures which can be used to illustrate the terms *left* and *right*. The pictures may be placed on the arithmetic game table or the bulletin board.





LEARNING ABOUT THE NUMBER FOUR

Preparatory Activities

Page 13 is the first of three pages devoted to helping the children learn about the number *4*. As the children identify groups of four objects, the relationships among the numbers *1, 2, 3,* and *4* are shown incidentally.

Using concrete materials. Before the pupils use their books, they should be given experiences with concrete materials, such as those suggested below.

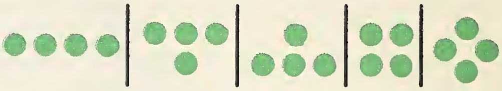
Arrange various objects at the front of the room. Include single objects as well as groups of two to four objects. Chairs, toys, books, or large blocks may be used. Have the children identify all of the groups that have four objects in them. Then ask questions that will invite comparison between the different sized groups, as:

How many toys are there? How many books are there? Are there more books than toys?

Have the children find a group of four objects and then find another group that has as many objects in it.

Write the symbol *4* on the blackboard and explain that it means four things, as four books, four chairs, or four of anything.

Have the children count out on their desks several groups of four objects, as buttons, bottle caps, small blocks, or cards. Then ask them to make as many arrangements as possible with the groups of four. These arrangements may be included:



Kinesthetic responses. Experiences involving kinesthetic responses may be used also in helping children understand the number four, for example:

Have the children beat time to music in four-four time. Have them march to the music and count as each step is taken, 1–2–3–4, 1–2–3–4, and so on.

Functional use of the number. The children should be helped to associate the number *4* with everyday experiences, as: Many animals have four legs, as horses, cows, dogs, cats. Cars, wagons, and trucks have four wheels. There are four seasons in the year—spring, summer, fall, and winter. A pencil or an apple may cost four cents.

Using Page 13

Help the pupils to identify the toys in the picture. Call attention to the symbol *4*, and have them draw a line from the *4* to each group of four toys.

In the box at the bottom of the page, have the pupils draw four toys. If toys are too difficult to draw, let them draw dots, triangles, or circles, or make X's.

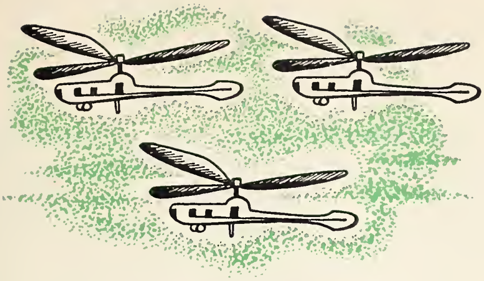
Follow-up Activities

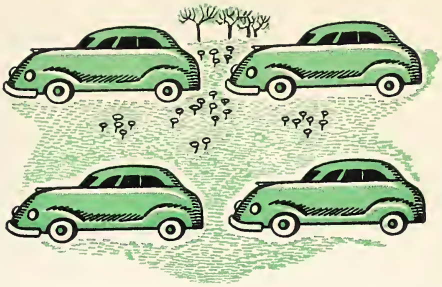
Additional learning helps. If some of the children failed to follow the directions for working with page 13, a similar exercise may be put on the blackboard. In this exercise, pictures of objects may be drawn and the children helped step by step to find the groups of four objects and to draw lines from the symbol *4* to each of the groups of four.

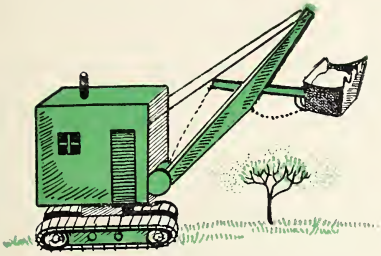
The teacher may display pictures cut from discarded magazines and have the children identify groups of four children, four toys, four pets, and so on.

Line drawings of blocks, dots, or triangles may be made on the blackboard and the children asked to circle those groups that have four things in them.

Enrichment activities. The faster learners who do not need additional help with the number *4* may find in magazines pictures that have in them groups of four objects. These may be put on the bulletin board or placed on the arithmetic game table where they can be used by the children who need more help with the number.







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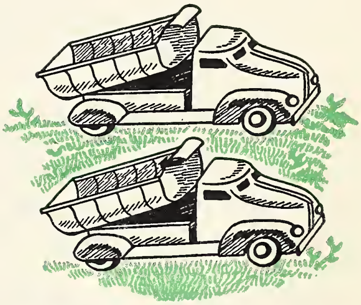
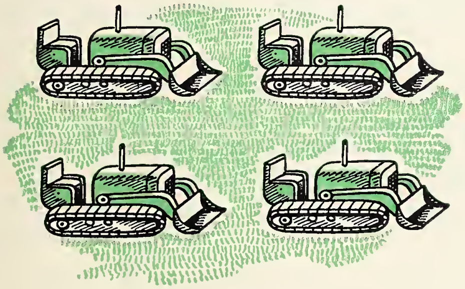
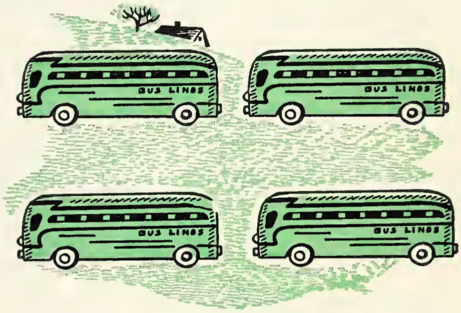






Learning about the Number Four (continued)

Preparatory Activities

The pupils are now ready to extend their understanding of the meaning of *4*. On page 14 they are given experiences in increasing smaller groups to make groups of four and in finding a group of four within a larger group.

Using concrete materials. In order that the children may have experiences with concrete materials before they work with page 14 in their books, they may be given activities such as these:

Place on a table in the front of the room one book, three boxes of crayons, and two rulers. Have various children put more books, more boxes of crayons, and more rulers on the table so there will be four in each group of objects.

Next, ask each child to place one small object on his desk. Then have him put with it enough more objects to make four. Repeat the procedure, having the children begin with two objects and then with three.

Draw on the blackboard one house, two cars, and three trees. Have the children draw more of each so there will be four houses, four cars, and four trees.

Place five chairs in the front of the room. Have a child remove all but four of the chairs. Repeat the activity with six and then with seven chairs.

Ask a child to draw five squares on the blackboard. Then ask another child to put a line around four of the squares. Repeat the exercise with six and with seven squares.

Using Page 14

Call attention to the flags at the top of the page. Have the children draw enough flags to make four in each row.

Have the children find the picture of the wagons and help them to see that the dotted line is drawn around four of the wagons. Have them trace the dotted line. Then explain to the pupils that they are to draw a line around four of the fire engines in the picture at the right and another line around four of the trucks in the picture at the bottom of the page.

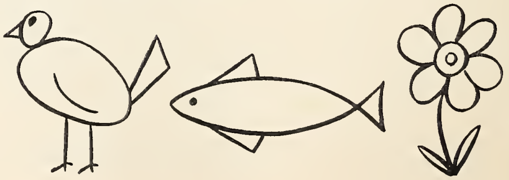
Follow-up Activities

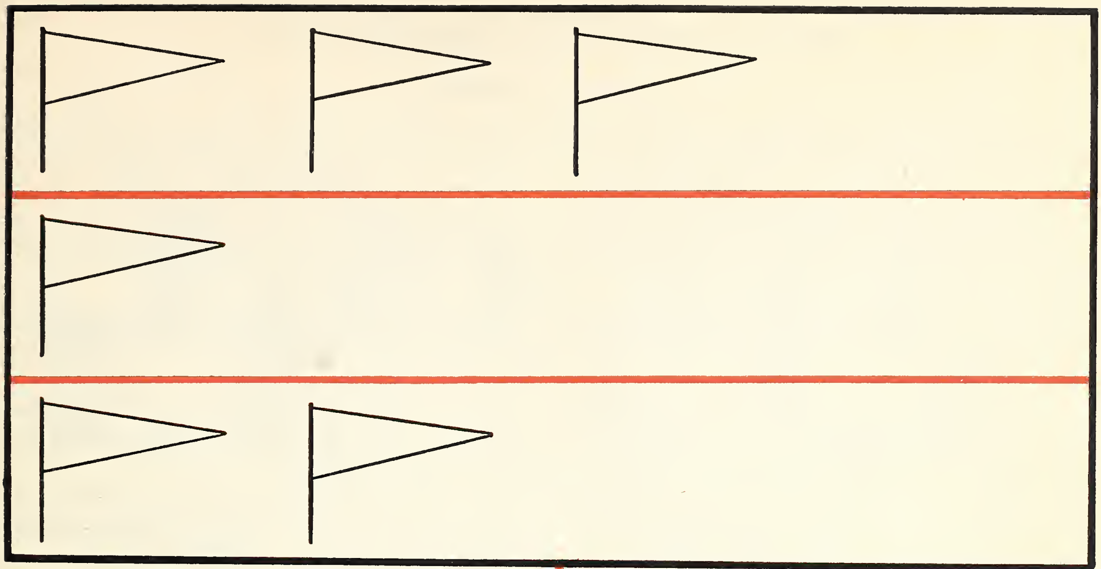
Additional learning helps. If the teacher finds that some of the children have not yet learned to recognize groups of four, the suggestions for preparatory activities may be repeated.

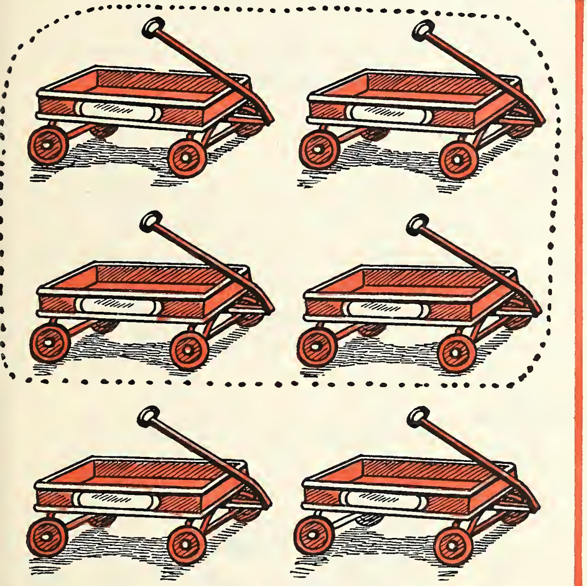
If the difficulty appears to be lack of ability to follow the directions for working with the page in their books, exercises similar to those on page 14 may be mimeographed or hectographed and given to those who need assistance. Individual attention may be necessary to help the slower children develop the coordination necessary for drawing more objects to make a group of four or for drawing a line around four of the objects in a larger group.

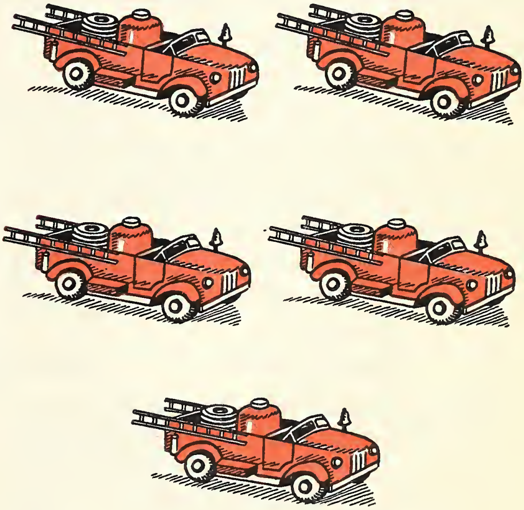
It will be helpful also to give pieces of art paper and boxes of gummed seals, such as hearts, stars, dots, or flowers, to the children and let them paste four seals on each piece of paper. Or the teacher may put one, two, or three seals on each piece of paper and ask the children to increase the number of seals to four.

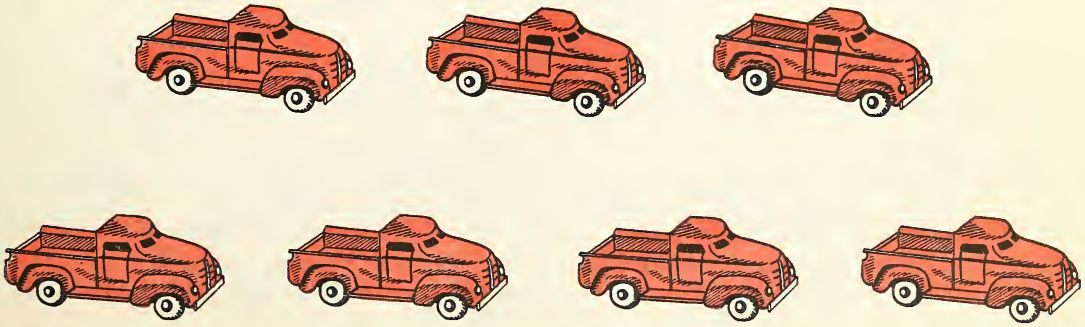
Enrichment activities. The faster learners may cut from magazines pictures of objects that can be pasted on pieces of art paper in groups of four to make pictures for the science corner, as four birds, four fish, four flowers, etc. Or the children may draw the pictures, using such simple figures as these:











Learning about the Number Four (continued)

Preparatory Activities

The exercises on page 15 serve two purposes: (1) they help the children learn to write the symbol *4* correctly, and (2) they provide opportunity to use the symbol *4* and the symbols learned earlier to show how many objects there are in the pictures.

Practice in writing the number. The teacher should demonstrate at the blackboard the correct way to write *4*. The children need to be shown where to begin each stroke and the direction the lines take. After this is done, have them pretend to write a large *4* in the air. Then give them models to trace. Finally, ask them to make several *4*'s and compare their results with the models.

Using concrete materials. Give the children an opportunity to use the *4* as a symbol to tell how many objects they see in a group. Both concrete materials and pictures may be used for this experience, as suggested below.

Call four boys to the reading table. Then ask how many boys there are at the table. A child may write on the blackboard the number that tells how many.

After several experiences with four objects, give the children an opportunity to use the symbols *1*, *2*, and *3* in the same way.

Place two books on the table and have the children write the number that tells how many books there are.

Show the children a picture with one animal in it, and ask them to write the number that tells how many animals they see.

Draw three tops on the blackboard. Then have the children write the number that tells how many tops are in the picture.

Using Page 15

If the preparatory activities were followed as suggested above, the children should be able to apply what they have learned to the exercises on page 15.

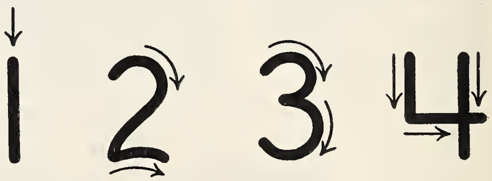
Explain that the arrows in the first dotted model show where each part of the *4* begins. Have the children trace the two models and then write *4* in each of the remaining boxes.

Help the children to identify the different kinds of toys. Then explain that they are to find how many toys there are in each picture and write the number on the black line.

Follow-up Activities

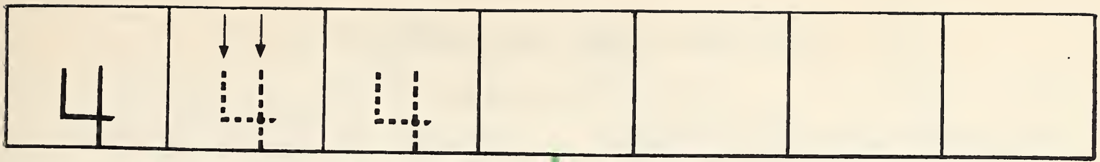
Additional learning helps. With even the most careful teaching, there may be a few children who had difficulty with the exercises on page 15. It is unlikely that any of them were unable to find the number of toys in the various pictures, but it is quite possible that they did not know how to write the numbers. When the teacher determines which numbers caused the difficulty, she should provide models for the children to trace, and explain again where to begin and the direction to go in writing each number.

Since these children are probably slow learners, it will be helpful to provide each of them with models, such as those illustrated here, to be used for reference. The children may retain these models to be used whenever they are needed.



Enrichment Activities. The faster learners who are making the arithmetic matching games may make cards for the number *4*, using the same pattern as that suggested on page 36 for the number 3.

The children who are making scrapbooks or arithmetic folders may make pictures, or cut pictures from discarded magazines, to illustrate the number *4*.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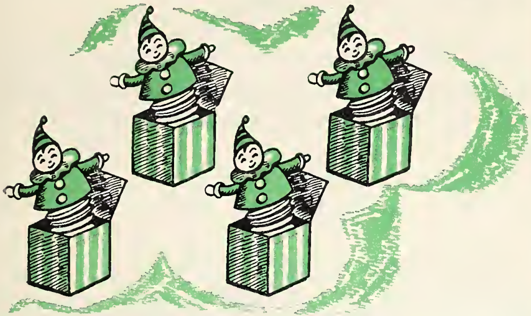

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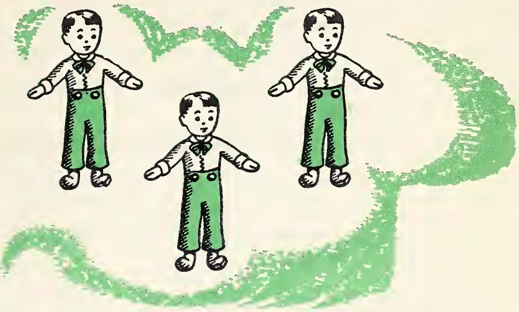

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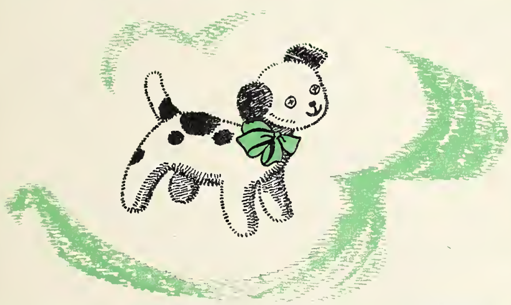

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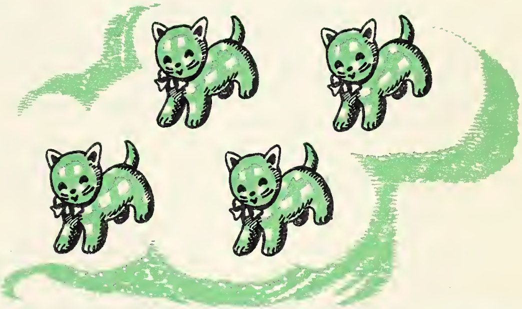

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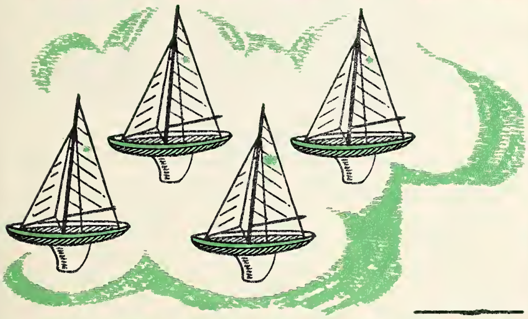

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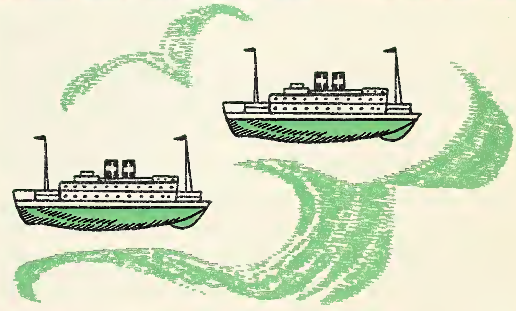

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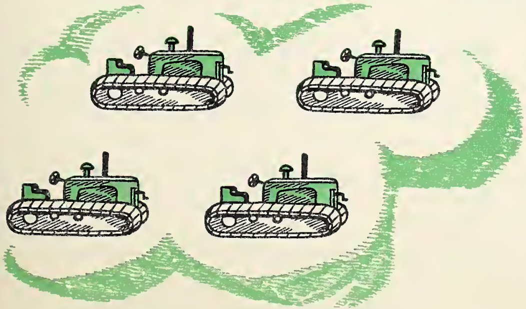

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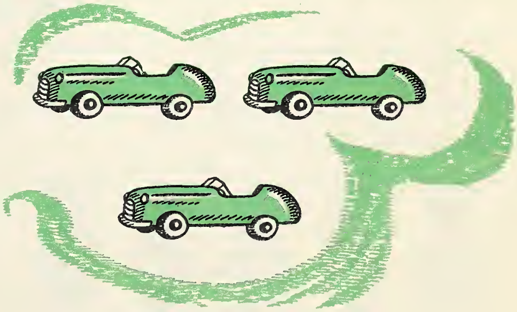

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LEARNING ABOUT THE NUMBER FIVE

Preparatory Activities

The exercises on page 16 provide experiences in recognizing the symbol 5 and in identifying and making groups of five objects. They also help to develop understanding of the relationships among the numbers 1 to 5.

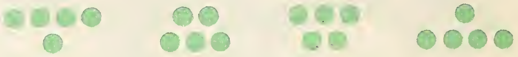
Using concrete objects. Before the children work with the exercises on page 16, they should have realistic and concrete experiences such as the following to develop understanding of the number 5.

Place around the room groups of large objects for the pupils to count. These should vary in number from one to five, as two plants in pots, five books, four chairs, five large blocks, three boxes of chalk, one table, and five packages of paper. Ask the children such questions as these:

How many plants are in the window? How many boxes of chalk are on the table? How many books are on my desk?

Have the children find all of the groups with five things in them. As they count the objects, write the symbol 5 on the blackboard and explain that it means five blocks, five books, or five of anything.

Have the children get out their boxes of small objects and count out several groups of five each. They may arrange them in as many ways as they can in groups of five, as:



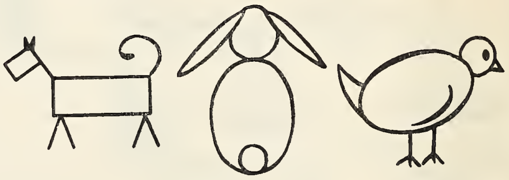
Kinesthetic responses. Have the children tap on their desks with pencils and count in a rhythmic pattern: 1–2–3–4–5, 1–2–3–4–5. Or they may make strokes on paper with a pencil as the teacher strikes a triangle or counts: 1–2–3–4–5.

Functional use of number. Recalling ways in which the number 5 functions in realistic situations will help the children become aware of the significance of the number. For example, we have five fingers on each hand and five toes on each foot. We go to school five days each week. Candy bars and packages of gum cost five cents.

Using Page 16

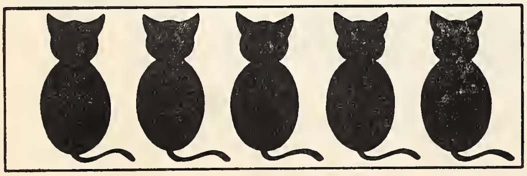
Help the children to identify the baby animals in the pictures at the top of the page. Call attention to the symbol 5, and have the children draw a line from the 5 to each picture that has five animals in it.

The children are to draw five animals in the box at the bottom of the page. They may draw balls if animals seem too difficult; but they may enjoy making simple line drawings such as these:

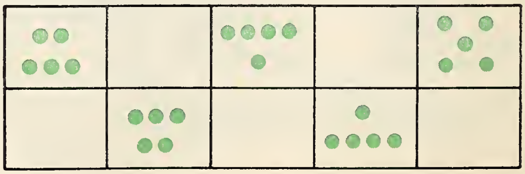


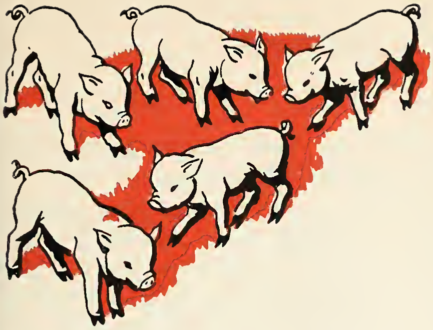
Follow-up Activities

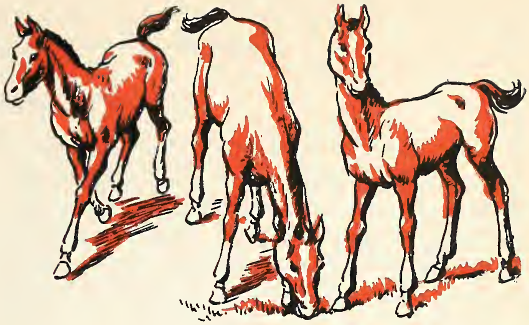
Additional learning helps. If there are any children who need additional help with the number 5, they may make pictures of 5 animals, balls, or squares.

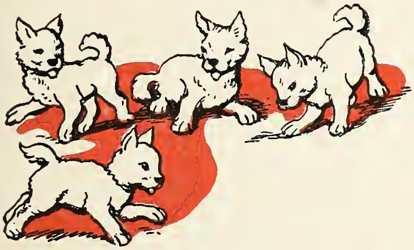


Enrichment activities. The faster learners may be interested in making designs such as this, using different arrangements of five objects:









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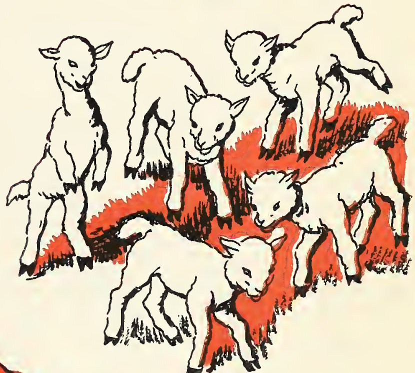
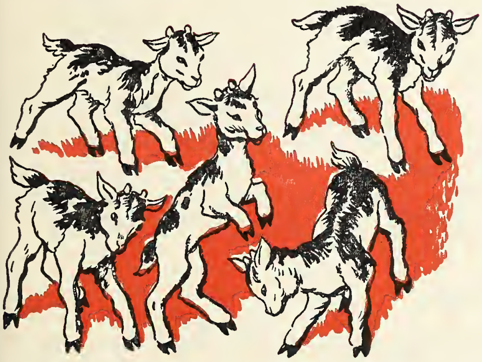
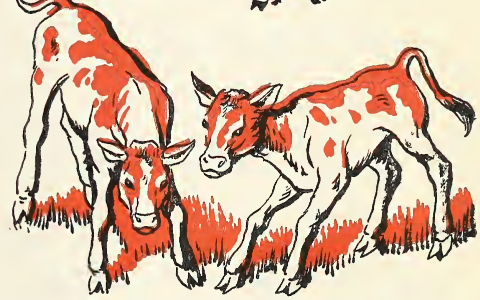






Learning about the Number Five (continued)

Preparatory Activities

Now that the children have learned to identify groups of 5 and to recognize the symbol 5, they should extend their understanding of the number to include seeing it in relation to other numbers. Two types of experiences are provided on page 17 for this purpose.

Using concrete materials. The teacher will find it expedient to provide experiences with concrete objects before the pupils do the semiconcrete exercises in their books. Perhaps there are large objects in the room that can be used first. For example, the teacher may place 4 chairs around a table, 3 pictures on the bulletin board, 2 erasers on a chalk ledge, and 1 softball on one of the desks. Then she may ask the children to put more chairs around the table so that there will be 5, more pictures on the bulletin board so that there will be 5, etc.

The children should use their small counting objects to repeat the experiences. First, they may place 4 objects on their desks; and then 3 objects, 2 objects, and 1 object, in separate groups. Now the children may place more objects on their desks so that there are 5 in each group.

The teacher may arrange 6 chairs, 7 pictures, and 8 erasers in groups. The children may remove some of each group so that only 5 things remain in the group. They may repeat the experience with their counting objects at their desks by making a group of 6, one of 7, and one of 8 objects, and then removing some objects from each group so that only 5 remain.

Using Page 17

After the children have participated in preparatory activities such as those outlined above, they may work with page 17. First, let them draw more eggs in each row at the top of the page so that there will be 5 eggs in each row. Next, help them discover that the line makes a "pen" around 5 of the ducks. Let them trace the line with their pencils. Have them draw a line around 5 of the chickens and 5 of the goslings.

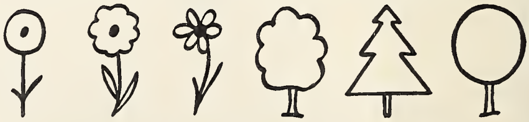
Follow-up Activities

Additional learning helps. A few of the very slowest learners may need more help with groups of 5. These children should repeat some of the experiences with concrete objects. The teacher may help the children arrange on their desks groups of 4, 3, and 2 counting objects and a single object. Then they may place more objects on their desks so that there are 5 objects in each group. Next, the teacher may arrange on each child's desk groups of 8, 7, and 6 counting objects. Then the children may remove all except 5 objects from each group.

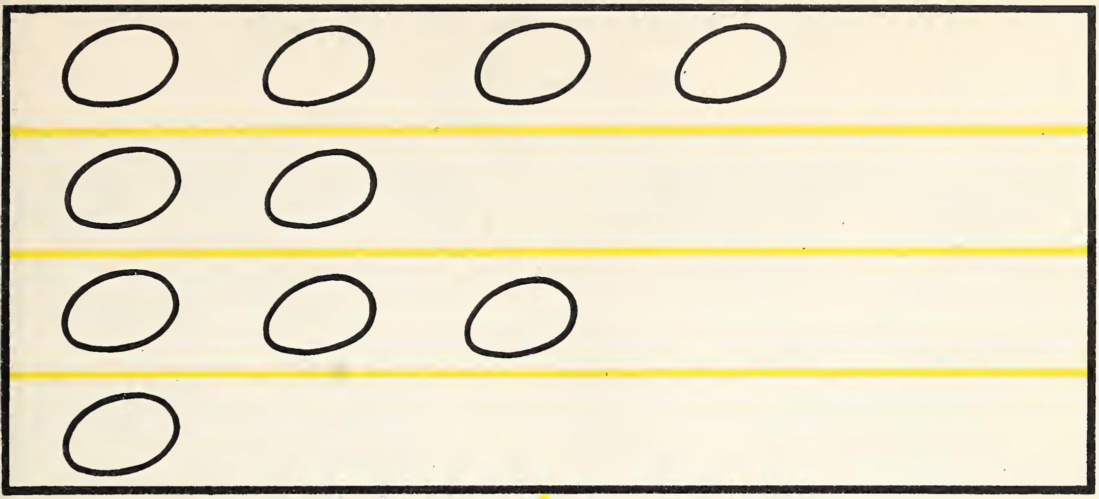
Perhaps, after these additional experiences, the children can correct their mistakes in the exercises in their books.

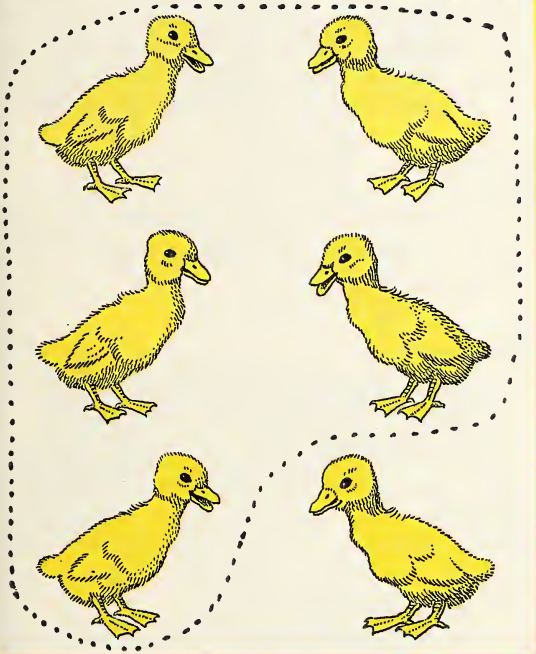
The kinesthetic response often is very effective in helping children understand. The children may draw groups of 2, 3, and 4 small objects, and then increase them to groups of 5. Next, they may draw groups of 6 to 8 objects and mark out enough objects in each group so that only 5 are left.

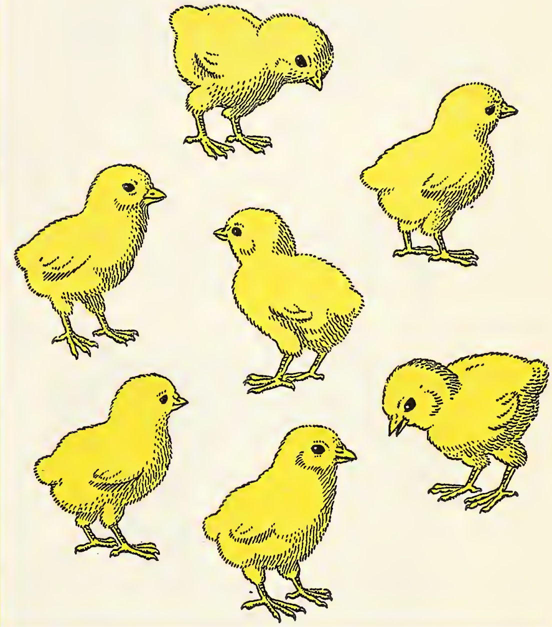
Such pictures as these may be suggested:

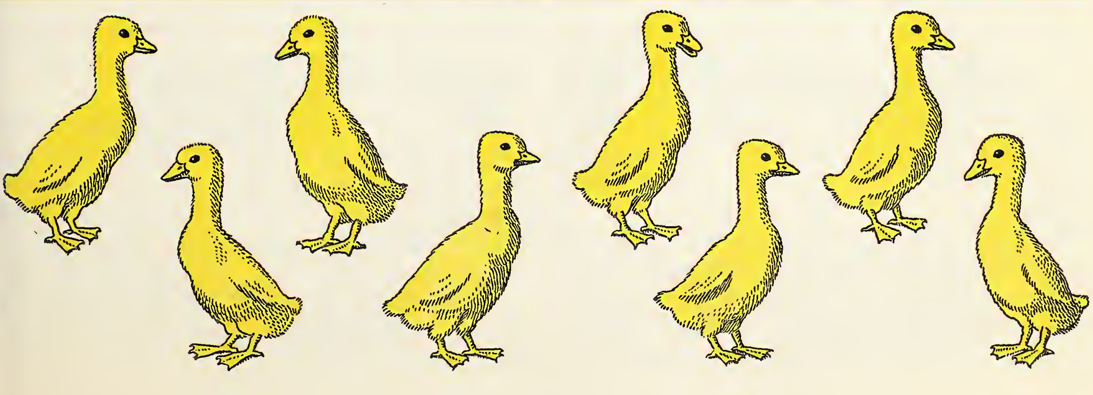


Enrichment activities. Perhaps the faster learners who do not need help with groups of 5 would profit from making pictures of things they can buy for 5 cents. They may be shown how to make the cent sign (¢) so that they can label their drawings. Later these things can be used in a toy shop activity related to making change and buying and selling in number stories.









Learning about the Number Five (continued)

Preparatory Activities

The next learning step for the children is to learn to write the symbol 5 and to apply this skill in situations similar to those in which it will be used later. The exercises on page 18 provide for these two experiences. They provide for maintenance in writing the symbols *1* to *4* also.

Learning to write the symbol 5. The children should have some help in learning to write the 5 before they use the exercises in their books, since the books are designed to let them apply, with success, what they have learned.

The 5 is another symbol which frequently causes difficulty for children. Large models should be provided at the blackboard, and care should be taken to point out where to begin to write the symbol and which way to go. Let the children trace models at the blackboard. Let them "practise" writing the 5 in the air. Let them write it freely several times on their paper.

Then this symbol may be used, together with the others that have been learned, in an activity of this type:

Let a child draw a picture of a group of not more than 5 toys, animals, trees, or children. Let another child write the number that tells how many there are. Several children may have turns making pictures and writing symbols. Perhaps someone will prefer to show a picture of a group of things cut from a magazine. Another child may wish to hold up toys, books, etc., to be counted.

Using Page 18

Call attention to the arrows, and have the children trace the dotted models. Have them write 5 in each of the other boxes. Have them identify the pictures, count the animals, and write in the blank the number that tells how many there are.

Follow-up Activities

Additional learning helps. If there are any children who need more help in learning to write the symbols *1* to *5*, the teacher will wish to provide the help at this time. As new symbols are introduced, those presented earlier should be used again and again. In this way, the children are helped to overcome mistakes before they become fixed habits, and are given continued experience in using what they have learned.

Practice at the blackboard is probably the best way to learn how to form the symbols. By observing as the children try to write them, the teacher will be able to discover what the difficulties are. Then she can help the individual child to overcome his difficulties.

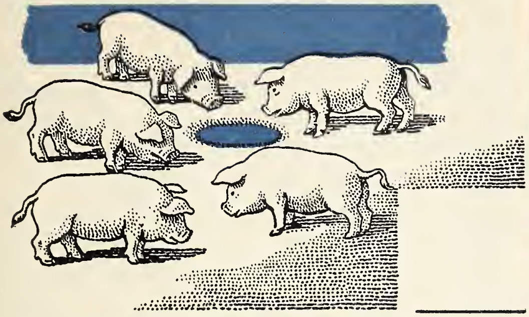
Sometimes young children lack the muscular coordination necessary for good writing. If coordination is lacking, the teacher may provide models of the numbers. These models can be made on the blackboard or on large pieces of unlined paper such as newsprint or wrapping paper.

It was suggested earlier that each child who has shown that he will need continued help be given a strip of paper for the top of his desk with models of the number symbols to guide him. A model of the 5 may be added to this strip.

For those children who had difficulty in counting and writing the numbers, work with the sets of cards with the symbols and pictures that the faster learners are making for a matching game may be helpful.

Enrichment activities. The children who do not need help at this time may make sets of cards for the number 5 for the arithmetic matching game. If they wish to do so, they may continue to cut pictures of groups of things from magazines. They may start separating them according to the number of things in each picture, and making a folder for each number.

5	5	5				



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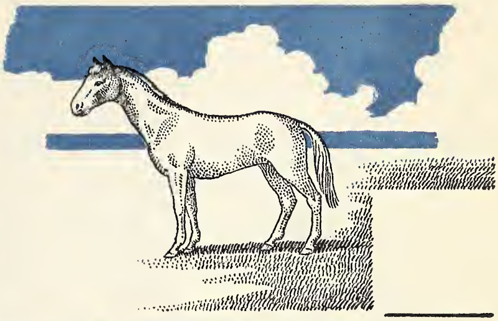

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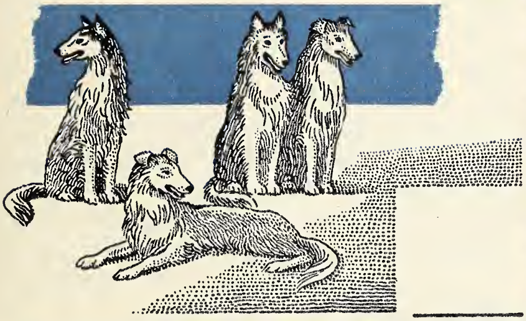

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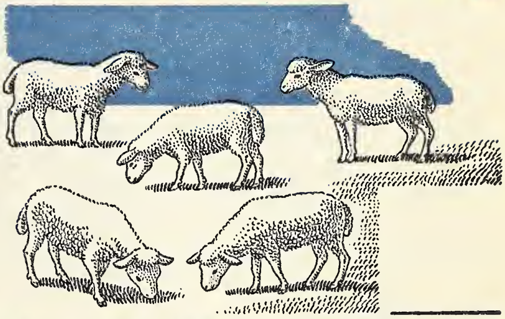

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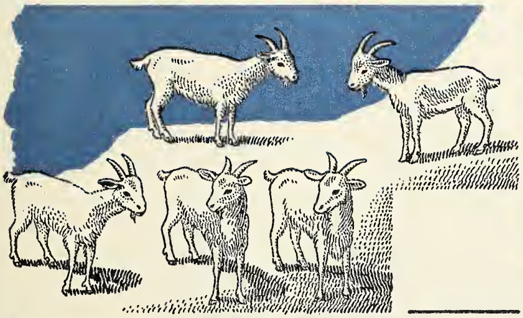

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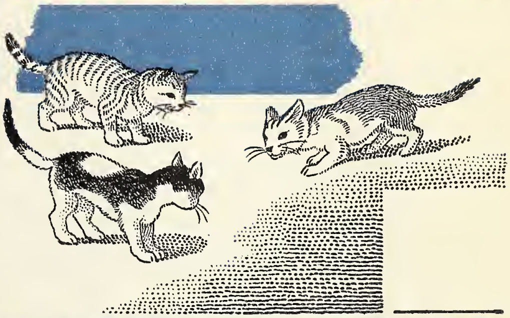

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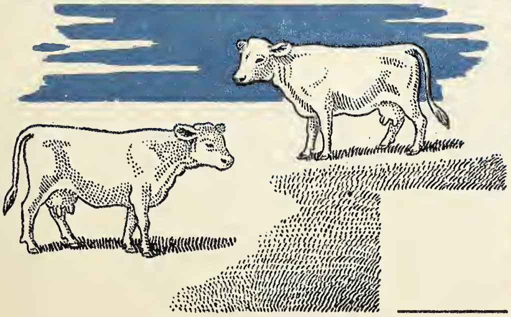

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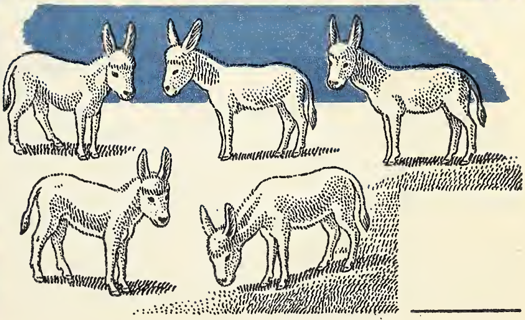

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LEARNING ABOUT THE PENNY AND THE NICKEL

Preparatory Activities

In the *Making Sure of Arithmetic* program care has been taken to provide an adequate treatment of money.

Now that the numbers *1* to *5* have been introduced, the penny (cent) and nickel (5 cents) can be presented and their relationship interpreted. Page 19 of the pupil's book provides for these experiences.

The teacher will probably wish to use classroom activities as a means of introducing the coins. If such activities do not occur as a part of the regular program, the suggestions given below may be used.

Recognizing coins. If the classroom situation makes it possible, actual coins should be used for this experience. If not, toy money that is as realistic in appearance as possible may be used. Several nickels and pennies may be placed on a table. Various children may take turns in counting the pennies, and then the nickels. As the teacher observes, she will find which of the children can recognize the two coins and which of them cannot.

Finding the relationship between pennies and a nickel. The children may name things that cost a penny and things that cost a nickel. Perhaps a piece of chewing gum and a package of 5 pieces of gum will be named. Perhaps some of the pictures of things made by the children as an enrichment activity can be used as a source for ideas.

The teacher may let various children pretend to buy 1 piece of gum for a penny or 5 pieces for 5 pennies, or a nickel. From this experience four generalizations or understandings should develop:

1 penny will buy 1 piece of gum
5 pennies will buy 5 pieces of gum
1 nickel will buy 5 pieces of gum
1 nickel will buy as much as 5 pennies

The language is important at this point. We do not wish to say a nickel is the same as 5 pennies. To a child, a nickel is one coin and 5 pennies are five coins—the same in buying power, but not in number. So we say that a nickel is as much money as 5 pennies.

Using Page 19

Call attention to the first picture. Then let the children get from the picture the fact that 1 cent will buy 1 marble. The children are to write in the box, by tracing the *1*, the number that tells how many marbles can be bought for 1 cent. Then ask how many marbles can be bought for 3 pennies, or cents, and have the pupils write the answer in the box. Next, have them draw marbles to show how many 5 cents will buy, and write the number. With the next picture, develop the concept that a nickel is as much money as 5 pennies; that it may be exchanged for 5 pennies; that the other name for a nickel is "5-cent piece." Have them write the number that tells how many cents a nickel may be exchanged for.

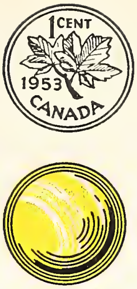
In the last exercise, have them show, by drawing, how many marbles a nickel will buy. Have them write the number in the box.

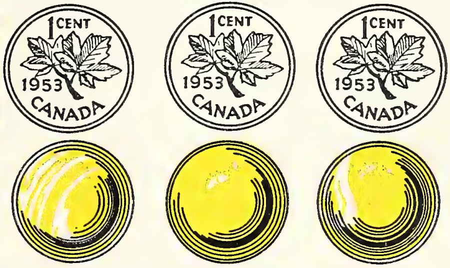
Follow-up Activities

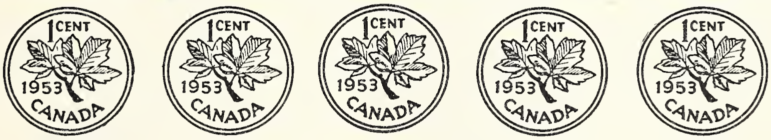
Additional learning helps. If some of the children need more help, the teacher may have them play store and bank. They may dramatize buying something that costs 1 cent; buying 2 things for 2 cents; and so on, to 5 things for 5 cents. They may exchange 5 pennies for a nickel and a nickel for 5 pennies at the "bank."

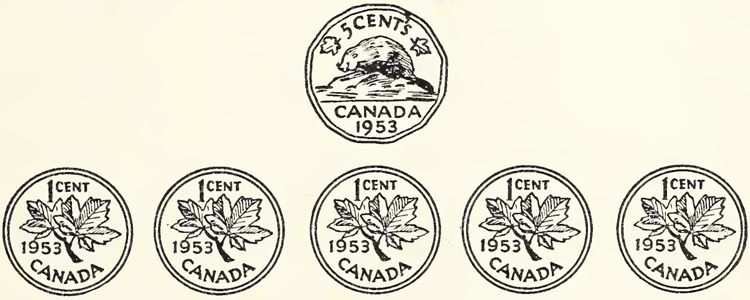
Enrichment activities. The children who do not need help may wish to make a picture for their arithmetic folders or scrapbooks to show how many of a 1-cent item they can buy for a penny and for a nickel. Some of them may wish to make toy money to use at the arithmetic table. It will be needed for later activities.

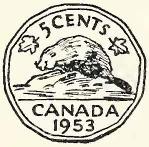
1¢


1 CENT
1953
CANADA


1 CENT
1953
CANADA


1 CENT
1953
CANADA


5 CENTS
CANADA
1953
1 CENT
1953
CANADA


5 CENTS
CANADA
1953

MAKING SURE OF THE NUMBERS *ONE* TO *FIVE*

Preparatory Activities

The first of the "Making Sure" tests is provided at this time. This test will help the teacher and the children find how well the children are able to examine groups and write the symbol to show the number in each group. No preparation is necessary for the test since the children are familiar with all of the techniques used. The teacher may wish to create interest in the test by telling the children that on this page they will have a chance to use some of the things they have learned.

Using Page 20

Help the children identify the seagulls, heron, blue jays, bluebirds, and blackbirds. Then have them find how many birds there are in each picture, and write the number in the blank in the corner of the picture. Have them read each number on the lower half of the page, and draw pictures of balls to show how many the number means.

Follow-up Activities

After the test is completed, the teacher will wish to examine the work of each child very carefully to determine his strengths and weaknesses. Then she will wish to make a record of the things he has learned and the things he needs to learn. (See suggestions on pages 12 to 13 of this book.)

Success in arithmetic comes with growth in understanding and with sureness in working and thinking with numbers. For children, an important element of growth is an awareness of the progress they have made, and an alertness to what they still need in order to succeed better.

For many of the children, it will be necessary only to point out to them the things they have already learned. This can best be done individually in a conversational tone. The conversation with the individual should be aimed at helping the child develop pride in good work and satisfaction in knowing that he has made progress.

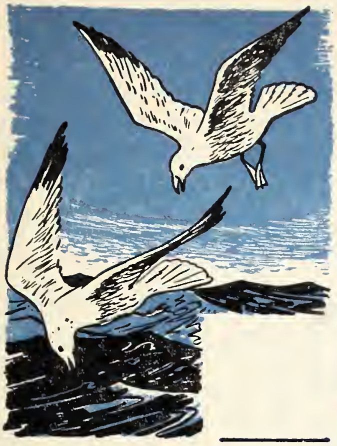
For a few children, it will be a matter first of helping them see what they have learned and how they have grown, and then of pointing out the things they need to do to make greater progress. Even at this grade level children can be helped to take responsibility for their own growth. The emphasis should be on overcoming specific difficulties, not on getting high grades. By making encouraging remarks and helping the child see just what he needs to do to improve, the teacher can make him aware of the advantages of working for his own growth instead of working for a star or a mark.

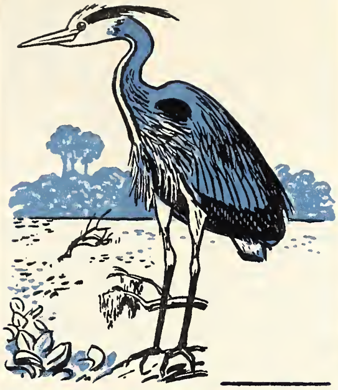
In addition to keeping an individual record for each child, the teacher will wish to make a rather brief but careful tabulation of the successes and failures of the whole group on the test. This check will show at once which phases of the work are understood by the whole group, and which, if any, need to be presented again.

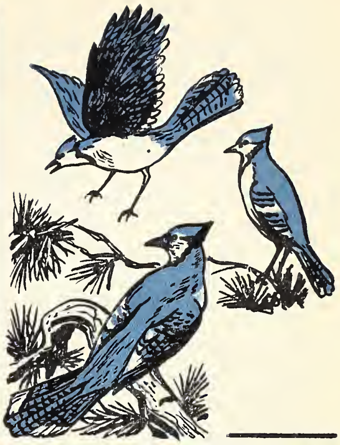
Additional learning helps. The teacher will wish to provide help for those children who were not able to make the association between a number symbol and the number of objects it represents.

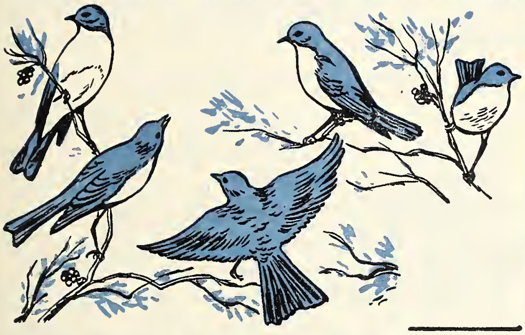
The teacher may ask the children to count things in various places in the room. Perhaps there are 2 plants in a window. A child may count them and write the symbol to show how many he counted. Next, a child may count 3 chairs, and write the correct symbol. Then 4 and 5 things can be counted in turn, and these symbols written. All of the children who need this practice should have a turn at responding.

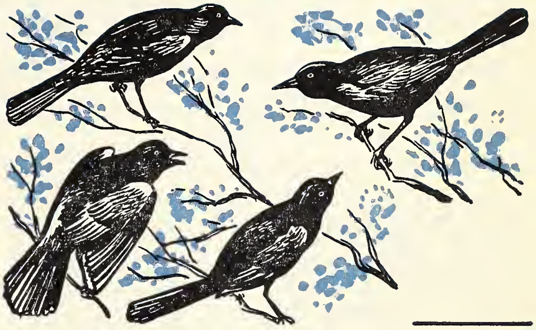
The teacher may place before each child groups of 2, 3, 4, and 5 of his small counting objects. He may count the number of objects in each group and write the number on a small piece of paper.











1

2

3

4

5

MAKING SURE OF COUNTING TO TEN

Preparatory Activities

The second "Making Sure" test is provided on page 21. Since neither this test nor the test on the previous page will require much time, both tests may possibly be completed on the same day. As was the case with the preceding test, no special preparation will be necessary, although the teacher may create an interest in the activity.

Using Page 21

Since the children have not learned to write the symbols *6* to *10*, this must be an oral exercise. The children may identify the foxes. Then a child may count them, and tell how many there are. The beavers may next be identified and counted. Then the rabbits, chipmunks, and squirrels may be identified and counted in turn. Each of the children may have a turn at counting the animals, not always in sequence, but sometimes in miscellaneous order, as, for example, the beavers, then the squirrels, etc.

Follow-up Activities

What was said about making records of the children's work on the first "Making Sure" test applies to this test also.

Additional learning helps. The children who need help may be given experiences in counting groups of children, the desks in the various rows, books, and other large objects. At this point they should count groups of 6, 7, 8, 9, and 10, since those numbers will be developed further in the exercises which follow in the pupil's book.

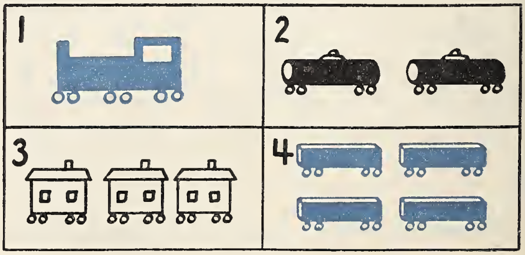
If possible, the counting should be so motivated that it will seem purposeful to the children. For example, if pennies have been collected for a fund drive, for lunch money, etc., they may be counted and put in stacks of 10 each. If counting objects are available for use in developing the tens idea in the later study of our number system, the children may make bundles of 10 by counting 10 objects and putting a rubber band around them. If it is explained to the children that bundles of 10 will be needed in quantity very shortly, they will feel that the counting is useful.

These children may also put into stacks the magazine pictures from the arithmetic table, putting in one stack pictures having 10 things in them, in another stack those having 9 things, etc.

Enrichment activities. The children who do not need help with the numbers to 5 and with counting to 10 (and this will probably be most of the children) may do other things related either to arithmetic or to other subjects and activities in the curriculum.

If they wish to work on something related to arithmetic, they may learn counting rhymes such as "One-little, two-little, three-little Indians," or "One, two, three, four, five, I caught a hare alive," etc. There are "finger plays" also, which the children probably know and enjoy saying, that use the numbers to 10.

These children may be interested in starting a large chart for the bulletin board to show the things they are learning in arithmetic. Such a chart helps them organize what they have learned and discover other relationships which have not yet been developed. The teacher may write the numbers on the chart. Then the children may make the pictures for the chart, or find them in magazines. The following illustration shows one type of chart that can be made.



LEARNING ABOUT THE NUMBER SIX

Preparatory Activities

The next three pages in the pupil's book provide experiences with the number 6, similar to those that have been given for each of the other numbers. On page 22 the children will identify groups of 6 and draw pictures to make a group of 6.

Providing realistic experiences. Before the pupils use their books, the teacher will wish to provide experiences with the number 6. These may grow out of classroom activities, or they may be those suggested below.

Groups of 6 children each may be arranged around the room. The children in each group may tell how many there are in the group. Then groups of 2, 3, 4, and 5 children, as well as of 6, may be arranged. The class may find the number in each group. They may find which groups are smaller than 6, which are larger than 3, etc.

The symbol *6* may be written on the blackboard. A child may tell what it is and draw 6 objects to show what it means.

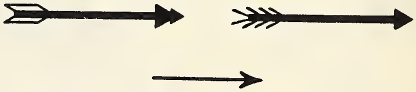
Using concrete objects. Each child may use his box of small counting objects for the next exercise. The teacher may place 6 objects on each desk and ask the child to tell how many there are. Then each child may make several groups of counters on his desk. A child who sits near him may find how many objects there are in each group.

The teacher may ask several children to draw groups of 2 to 6 objects on the blackboard. The other children may identify the groups that have 6 things in them.

Using Page 22

The children may discuss the pictures about Indians. Then they may draw lines from the symbol *6* to each group that has 6 things in it.

After this exercise has been completed, the children may draw 6 Indian arrows in the box at the bottom of the page. The children may make very simple line drawings, such as those shown here. Or, if they prefer, they may make lines or squares or circles. The pictures are unimportant, but the number of objects drawn is important.



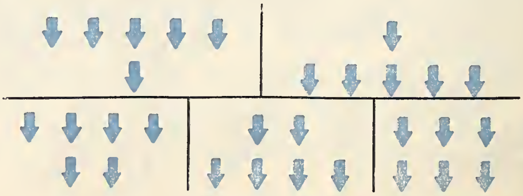
Follow-up Activities

Additional learning helps. Perhaps some of the slower learners need more help in identifying and making groups of 6. These children may have more experiences similar to those suggested as preparatory activities. For example, several pictures that have been cut from magazines may be displayed. Some should show 1 object; others should show groups of 2 to 6 objects. These may be animals, toys, fruit, cars, etc. The children may identify the groups of 6.

The children should use their concrete objects again to make groups of 2 to 6 on their desks. The teacher may check to see that each child has made, and can identify, groups of 6.

Then each child may make a card with a group of 6 objects on it, as follows:

Enrichment activities. The children who do not need help with the number *6* may enjoy making pictures to show various arrangements of groups of 6. For example:



6

Learning about the Number Six (continued)

Preparatory Activities

On page 23 the children are given experiences in increasing the size of various groups to make groups of 6, and in isolating a group of 6 within each of several larger groups.

Using realistic experiences. Classroom activities may be used to prepare the children for the exercise in their books. For example, the teacher may have 6 children seated in a group at a table or in the arithmetic corner. She may give 5 books to a child and ask him to pass them to the 6 children. He will discover that he needs more books in order to have 1 book for each of the children. Another child may be given 4 pencils and asked to get more so that there is 1 pencil for each of the 6 children. Another child may be given 3 pieces of paper; another, 2 rulers; and still another, 1 pair of scissors. These children will need to get more paper, rulers, and scissors in order to have 1 piece of paper, 1 ruler, and 1 pair of scissors for each of the 6 children.

Using concrete objects. The teacher may have the children place on their desks groups of 5, 4, 3, and 2 counting objects, and 1 single object. Then she may ask them to put more objects on their desks so that there are 6 in each group.

Next, the teacher may have the children put 3 groups of counters on their desks, with more than 6 in each group, and ask them to make a group of 6 out of each of the larger groups by removing the right number of objects.

Using kinesthetic responses. Experiences involving rhythmic patterns and kinesthetic responses may be utilized also. For example, the teacher may count in rhythm: 1–2–3–4–5–6; 1–2–3–4; 1–2–3–4–5; 1–2–3–4–5–6; etc. The children may make marks on paper with a pencil as the teacher counts. Then they may make more marks for the groups of fewer than 6, so that there are 6 marks in each group.

Next, they may listen as the teacher claps or taps. When they hear 6 sounds before the pattern is interrupted, they may say, "six."

Using Page 23

The children are to draw more tepees so that there will be 6 in each row. After they have been helped to identify the Indian quivers, the bowls, and the canoes, they may be told to make a line around 6 of the things in each picture.

Follow-up Activities

Additional learning helps. If some of the children need more help, the teacher may use pictures to carry out these activities:

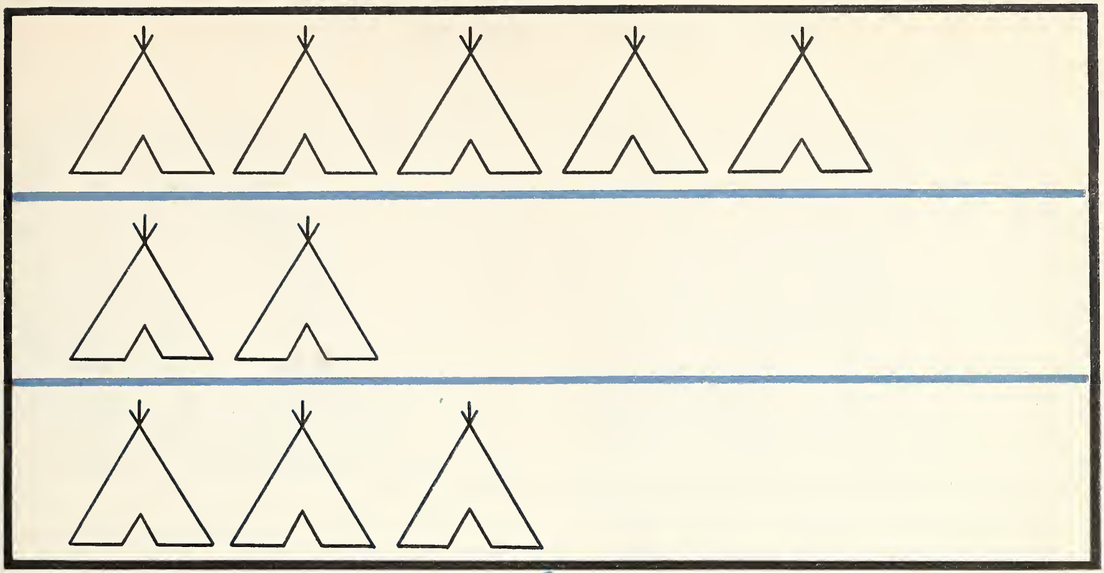
First, the teacher may draw pictures of 5 dolls, 3 doll chairs, 4 doll buggies, 2 doll beds, and 1 doll hat on the blackboard or on large pieces of newsprint or wrapping paper. The children may draw more of each thing so there are 6 things in each group. Then the exercise may be repeated, with children drawing groups smaller than 6, and other children increasing the groups to 6.

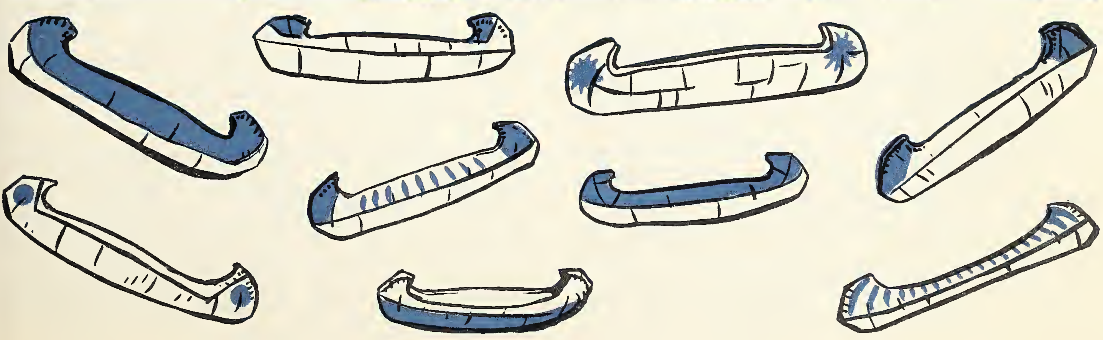
Next, the teacher may draw groups of 7, 8, 9, and 10 objects. The children may put a line around 6 objects in each group.

Various children may tap, clap, or bounce a ball. If a child taps 3 times, another child may continue the tapping to increase the number of sounds to 6, etc.

Then each child may use his small concrete objects to increase smaller groups to 6, as suggested for preparatory activities.

Enrichment activities. The faster learners may choose other things to do at this time. They may wish to look at picture books, or work in social studies. Some of them may wish to use matching games from the arithmetic table. Still others may be interested in finding pictures of groups of things in magazines.





Learning about the Number Six (continued)

Preparatory Activities

On page 24 the children will learn how to write the symbol *6*. Then they will be given an opportunity to use the number *6* and the numbers *1* to *5* to show how many things there are in various pictured groups.

Writing the symbol *6*. The teacher will wish to make sure the children know how to write the symbol *6* before they do the exercise in their books. Young children frequently have difficulty in writing the *6* because of a tendency to reverse it. If the children have practice in writing the *6* very large on the blackboard or on large pieces of unlined paper, it will be easier for them to make the small symbols in the book.

The teacher may demonstrate the way to write the *6*. Then the children may trace large models on the blackboard. If the children pretend to write the symbol in the air, this will help them to get the form in mind. Then each child may practise writing the *6* on paper several times.

Another opportunity presents itself to use the pictures of groups of objects that the children have cut from magazines. Several of these pictures showing 1 to 6 things may be displayed. The children may count the objects they see in each picture, and then write the numbers that tell how many things there are.

Using Page 24

The teacher may call attention to the models at the top of the page and explain that the arrow shows where to begin to write the *6*. The children may trace the dotted models. Then they may write the *6* in the next four squares.

After the children identify the pictures of the Indian headdress, baskets, feathers, bows, peace pipes, campfires, squaws, and bowls, they may write in the blank in the corner of each picture the number that tells how many things are in the picture.

Follow-up Activities

Additional learning helps. If any of the children had difficulty writing the symbols, the teacher will wish to have them repeat some of the activities suggested as preparatory activities. Particular care should be taken to plan the help to meet the needs of individual children. For example, if some of the children know how to make the symbols but make them poorly, the teacher may point out the mistakes that cause the poor writing, and provide models for use as guides.

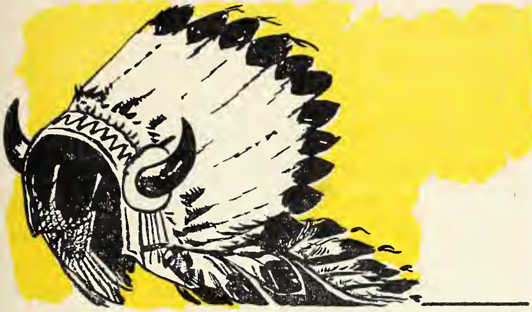
If other children reverse a figure, confuse one symbol with another, or in some other way indicate that they are not sure of the symbols, they should be given more experience in recognizing them, and in making large symbols at the blackboard or on paper. Then they may write smaller symbols on lined paper.

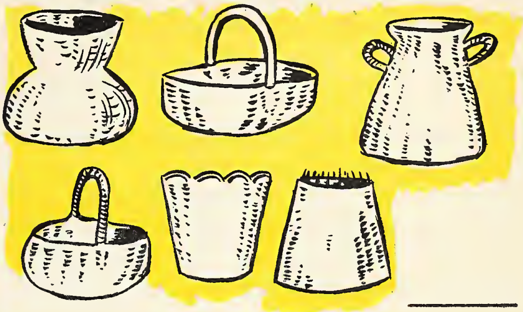
Some of the children may have had difficulty in associating the symbols with the numbers of objects which they represent. For these children an exercise with pictures will be helpful. For example, the teacher may make 1 picture and the children may write the number *1*. Then 2 pictures may be made and the children may write 2. The plan may continue until all of the symbols to *6* have been associated with pictures.

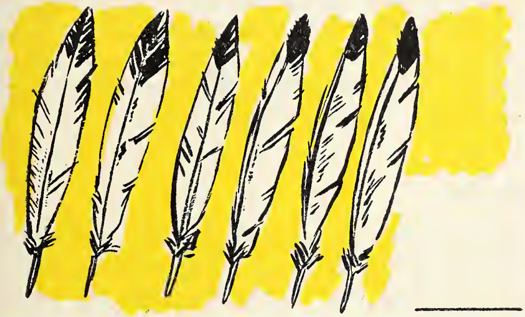
Each child who needs help may then place on a large piece of paper several groups of his counting objects, with 1 to 6 in each group. Then he may write on the paper below each group the number that tells how many objects are in the group.

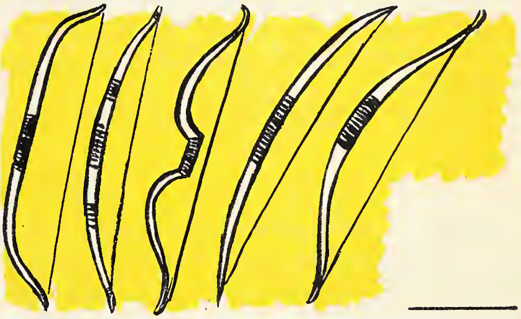
Enrichment activities. The faster learners may make cards with the symbol *6* and pictures of 6 objects for the arithmetic table. If some of them started a chart showing the numbers that have been learned, they may bring it up to date, including the symbol *6* and a picture of 6 things.

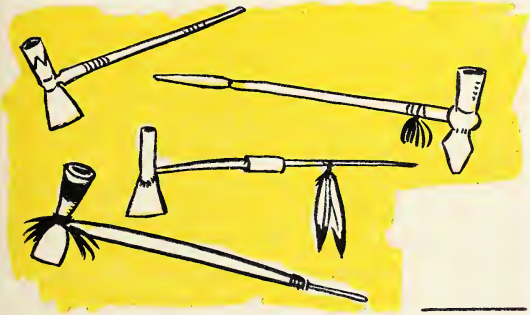
6	6	6				

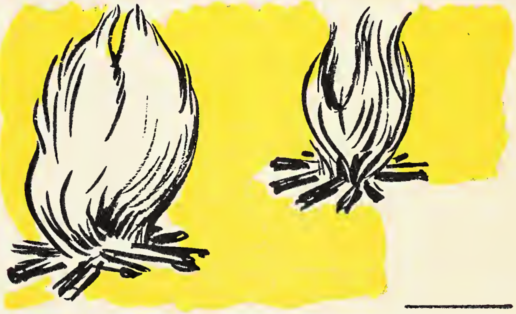


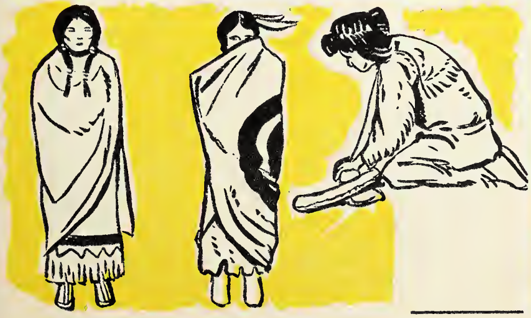


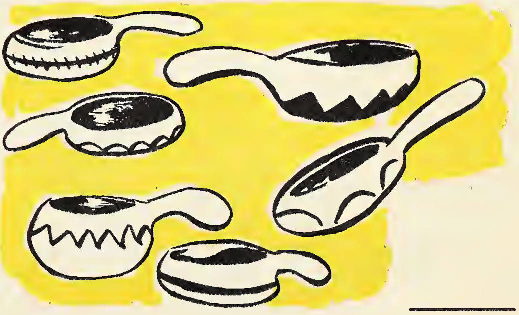












MAKING SURE OF TERMS

Preparatory Activities

The third in the series of "Making Sure" tests is provided on page 25. The test covers the positional terms *top* and *bottom*, and *left* and *right;* and the concepts *more* and *as many as.* No preparation for the test is needed.

Using Page 25

The teacher may help the children identify the hill in the picture. Perhaps it can be compared with a hill near the school or with a hill with which the children are familiar. When the teacher is sure the children understand what is meant, she may tell the children that they are to put some things in the picture by drawing them. She may ask them to draw a tree at the top of the hill first, and then to draw a house at the bottom of the hill.

After the children have completed the first exercise, they may discuss the picture of the boy to bring out the fact that he has nothing in his hands. Then they may be asked to draw a picture of a flag in the boy's left hand. When this has been done, they may draw a balloon in the boy's right hand.

The children may now put a line around the basket that has more apples in it. Then they may draw more apples in the other basket so that there are as many in that basket as in the first one.

Follow-up Activities

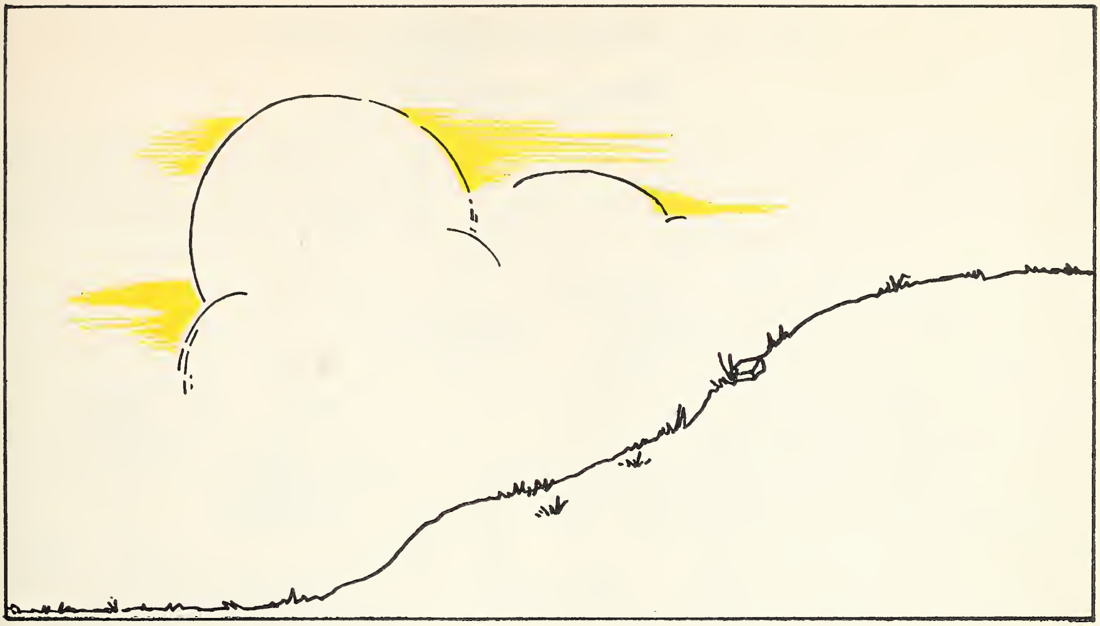
As the teacher evaluates each child's work, she will make notes of the things he has learned and of the things he needs more help in learning. From this evaluation the teacher will be able to plan ways to give help to the children who need it.

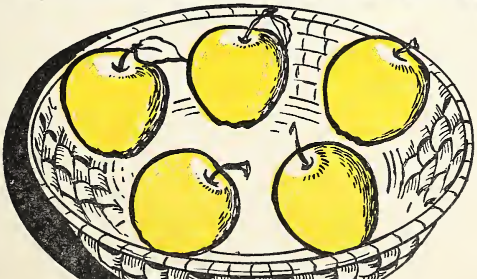
Additional learning helps. If there are any children who need help with the terms *top* and *bottom,* they should be given realistic experiences first. For example, they may be helped to identify the top and bottom of the blackboard, of the bulletin board, of a picture, etc. They may find the top shelf and the bottom shelf of the bookcase, the top and bottom books in a stack of books, etc. Then they may find the objects at the top and bottom of pictures drawn on the blackboard by the teacher. Next, they should find the exercise at the top of a page and the exercise at the bottom of the page in their books. Then the children may be given an exercise similar to the one in the book, in which they make a picture with something at the top and something at the bottom.

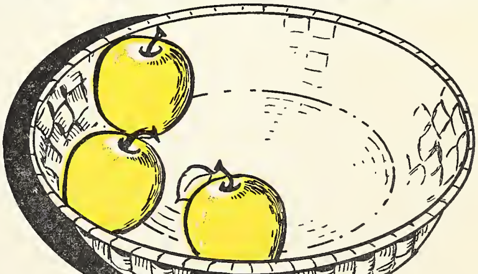
The relearning steps for the terms *left* and *right* should follow the same procedure. The children who need help with the terms may begin by identifying their own left and right hands, the child at their left and the child at their right, etc. Next, they may tell what is at the left and at the right on the blackboard and on the bulletin board, etc. Finally, they should find on a page in their books the picture at the left and the one at the right. They should be ready then to make a picture with something at the left and something else at the right.

The concepts of *more* and *as many as* may be relearned by using realistic experiences and concrete objects. The children who need help may be asked to examine two groups of children, of books, or of pencils to find which group has more in it. Then they may add more things to the smaller group so that it has as many things as the larger group. The experiences may be repeated with pictures similar to those in their books.

Enrichment activities. The children who do not need help at this time may use some of the matching games and other materials on the arithmetic table. Perhaps they can find among the pictures from magazines some that illustrate the terms *top* and *bottom, left* and *right,* and *more* and *as many as.*







LEARNING ABOUT THE NUMBER SEVEN

Preparatory Activities

The next three pages of the pupil's book provide experiences with the number 7. The experiences provided on page 26 are planned to help the children identify groups of 7 and make pictures to illustrate the number 7.

Utilizing realistic experiences. Classroom activities may be used to introduce the experiences with the number 7. For example, there may be groups of children engaged in various activities in different parts of the room. Seven of the children may be reading; and 7 other children may be using materials at the arithmetic table. Perhaps 3 children are drawing, and 4 children are writing at the blackboard.

The teacher may ask the children to find how many are reading. Then she may ask them to find another group with as many children as the group that is reading. Further questions such as these may be asked:

Are there more children at the arithmetic table than at the blackboard? Are more children reading than drawing?

The teacher may write the number 7 on the blackboard and have the children identify it. They may find again the groups of 7 children.

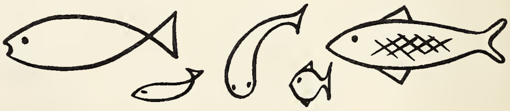
The children may use their counting objects at their desks to make two groups of 7, and groups of 6, 5, and 4. The teacher may give directions and ask questions such as these:

Find the group of 5. Are there more in this group than in the group of 4? Are there more in this group than in the group of 6? Find a group of 7. Find another group that has as many in it as this group, etc.

Using Page 26

Help the children identify the pictures of lobsters, snails, trout, frogs, turtles, and sea horses. Then have them draw lines from the 7 to each picture that has 7 things in it.

Have the children draw 7 fish in the box at the bottom of the page. They may make simple line drawings such as those shown here. Or if they prefer, they may draw balls or X's or squares.

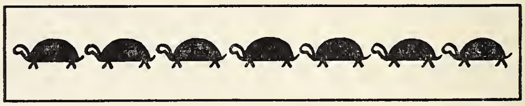


Follow-up Activities

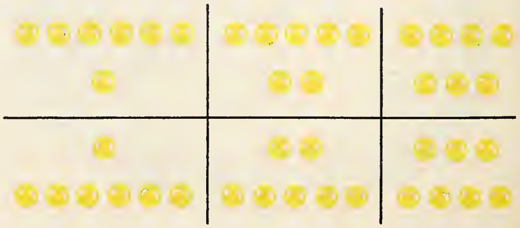
Additional learning helps. If some of the slower learners need more help with the number 7, the teacher may provide further realistic experiences. For example, the teacher may find pictures on the arithmetic table that have 3, 4, 5, 6, and 7 things in them. The children may choose those pictures that have 7 things in them.

The teacher may place on each child's desk, in groups, 3 counters, 4 counters, 5 counters, 6 counters, and 3 groups of 7 counters. The children may identify those groups that have 7 in them, and then identify the number in each of the other groups.

These children may make a card, such as the following, with pictures to illustrate the number 7.



Enrichment activities. The faster learners may enjoy making pictures to show as many ways as possible of arranging 7 things. For example:



7

Learning about the Number Seven (continued)

Preparatory Activities

The next experiences with the number 7 involve increasing the number of objects in various groups so that there are 7 in each, and isolating 7 objects in pictures of more than 7. These experiences are provided on page 27 of the pupil's book.

Utilizing realistic experiences. Classroom activities may provide experiences in increasing groups. For example, if mid-morning lunch is served, the children may be given napkins, bottles of milk, and straws in quantities of fewer than 7. They may get more of each item so that there are 7 of each. If such experiences are not feasible, the following may be used:

Give a child 5 books. Have him get more books so that he has 7. Give another child 1 eraser. Have him get more erasers so that he has 7. Give another child 3 boxes of crayons. Have him get more so that he has 7 boxes of crayons.

Then give a child 8 rulers. Have him take 7 of them. Arrange 9 piles of paper on a table. Have a child separate 7 piles from the others. Arrange 10 pencils on the table. Have a child separate 7 pencils from the others.

Using concrete objects. Have each child arrange his small counting objects on his desk in separate piles of 1, 2, 3, 4, 5, and 6 objects. Have the child put more objects with each pile so that there are 7 in it.

Then have each child arrange his counting objects on his desk in separate piles containing 8, 9, and 10 objects. Have him separate 7 objects from each pile.

Using Page 27

Call attention to the fishhooks in each row at the top of the page. Have each child draw more so that there are 7 in each row.

Have the children discuss the kinds of fish. Some may be able to identify the sunfish, walleyed pike, and goldfish, although this is not necessary. Then have them draw a line around 7 of each kind of fish.

Follow-up Activities

Additional learning helps. Those children who need help may play a game of make-believe. They may pretend that they need 7 of each of several toys for a party. Erasers, books, boxes of crayons, etc., may be used to represent the toys that are needed.

Give the children 6 "cars" and have them get more so that there are 7. Give them 5 "dolls," and have them get more so that there are 7. Continue experiences in increasing the number of "toys" to 7, providing 4 "toys" next, then 3, then 2, and, finally, 1.

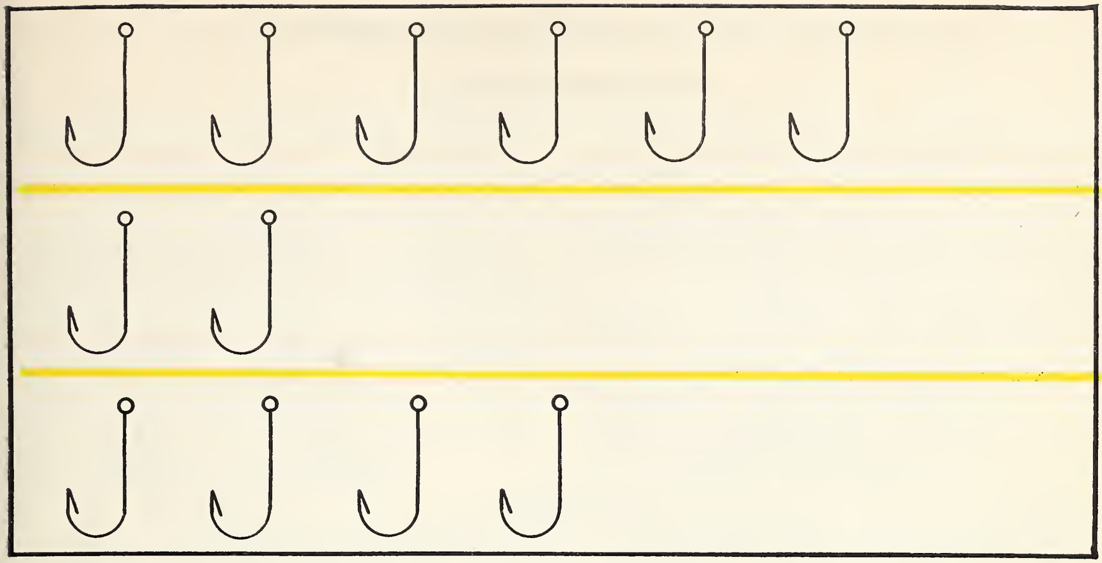
Now let the children practise decreasing larger groups to 7. For example, give them 8 "balls," 9 "tops," 10 "doll beds"; and have them separate 7 from each group.

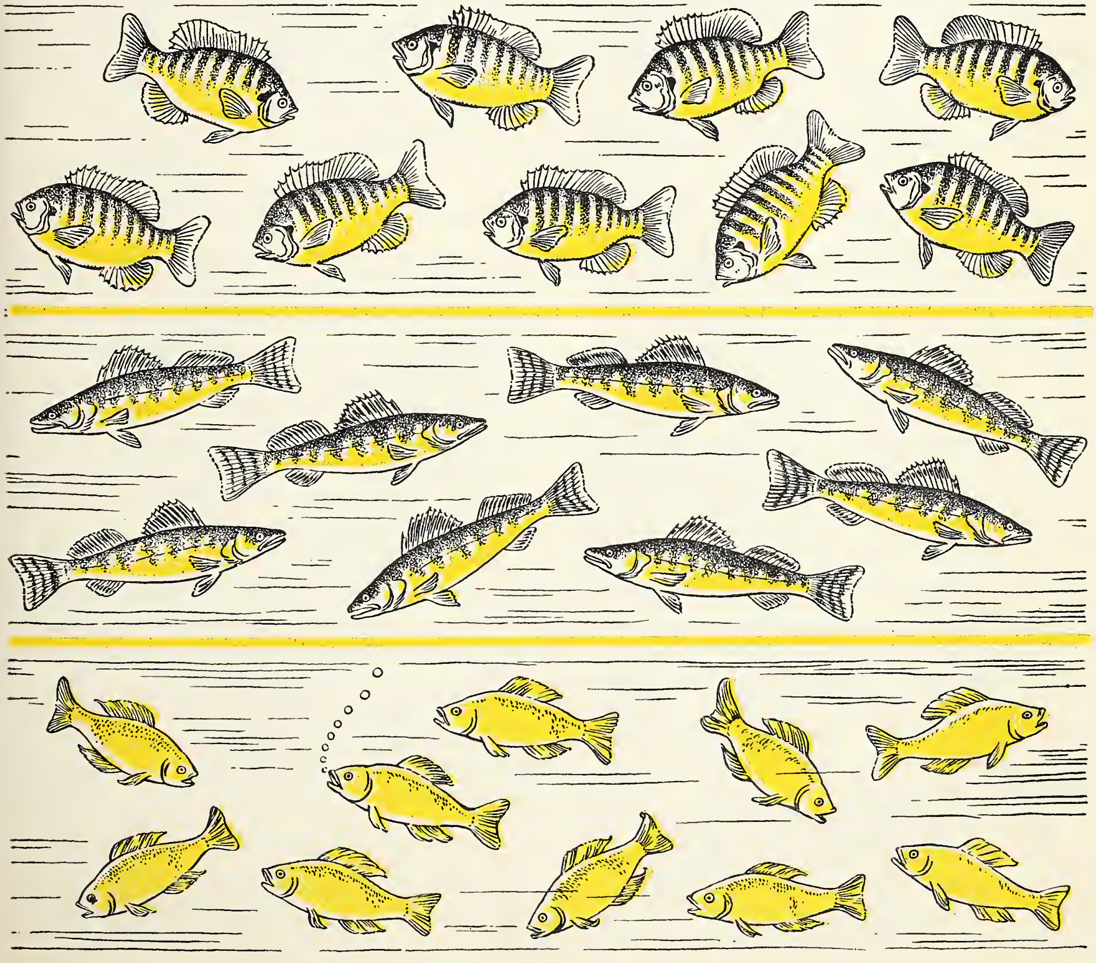
Then let some of the children draw on paper or on the blackboard 6 cars, 5 dolls, 4 scooters, 3 doll buggies, 2 wagons, and 1 truck. Have other children complete the groups by drawing more toys so that there are 7 of each kind. Such simple drawings as these may be made:

Now draw 8 balls, 9 doll beds, and 10 tops on the blackboard, and let the children put a line around 7 of the toys in each group.

Finally, have these children use their counting objects to increase smaller groups to 7 and to isolate groups of 7 from larger groups.

Enrichment activities. The faster learners may have work to do in connection with their arithmetic folders or scrapbooks. Some of them may wish to look through magazines for pictures to use on the arithmetic table.





Learning about the Number Seven (continued)

Preparatory Activities

The next learning step is writing the symbol 7 and using it, along with previously learned symbols, to show how many there are in pictured groups. The materials for these steps are provided on page 28 of the pupil's book.

Demonstrating the writing of the symbol. The teacher will find it helpful to show at the blackboard just how the 7 is written. Then several children may pretend to write 7 in the air After the children have tried writing in the air, they may trace large models of the 7 on the blackboard or on large pieces of paper. Then they may write the symbol independently.

The teacher may call attention to groups of children around the room, pictures on the bulletin board, or books on a table, etc. None of the groups should be larger than 7. Various children may write the numbers that tell how many things are in the groups.

Using Page 28

The models of the number 7 should be called to the attention of the children, with the explanation that the arrow in the second model shows where to begin to write the 7. The children may trace the models and then write the number four times.

After the children identify the snails, alligators, conch shells, crabs, porpoises, seahorses, tadpoles, and turtles, they may find how many there are of each kind of sea creature. They may write, in the blank in the corner of each picture, the number that tells how many sea creatures there are in that picture.

Follow-up Activities

Additional learning helps. After the teacher evaluates the children's work, these experiences may be provided for the children who may need help.

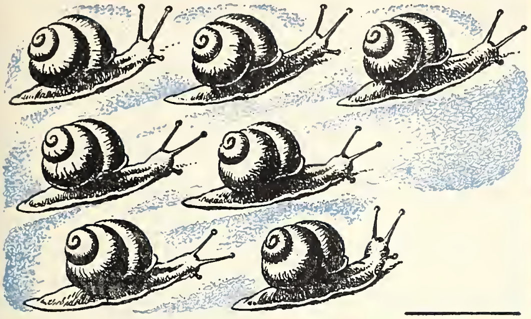
Those children who had difficulty in writing the symbol 7 may have another exercise at the blackboard. As they try to write, the teacher will find what the specific causes of difficulty are, and help the children overcome them. For example, if some children reverse the 7, they may be helped to see that the top stroke is made from left to right before the down stroke is begun. It is important that children with this particular type of immaturity get a good image of the number. Sometimes using colored chalk helps to fix the image in mind. Tracing the number helps also; but if tracing is used, the child must have a chance to write the symbol without a model to trace just as soon as he gets the form of the symbol clearly in mind. The child should write the 7 three or four times on ruled paper before he goes to another activity.

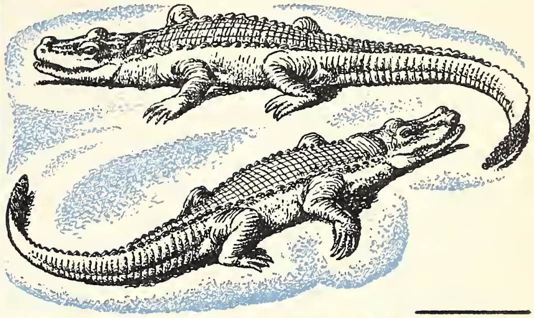
If any of the children had difficulty in associating the number of things in the pictures with the correct symbols, they may be given further experiences with groups of concrete objects. As they find how many objects there are in each group, the teacher may help them recall the symbol that is needed to show how many. The number cards the children have made may also be used for counting practice.

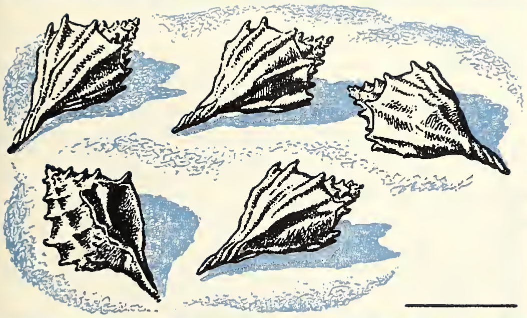
Enrichment activities. The children who do not need help at this time may engage in some of the activities suggested previously in connection with work with the other numbers.

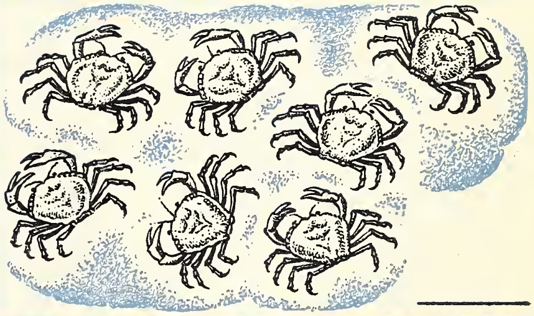
If they are making a chart of the numbers for the bulletin board, they may add the 7 to the chart and make a picture to illustrate it. For example:

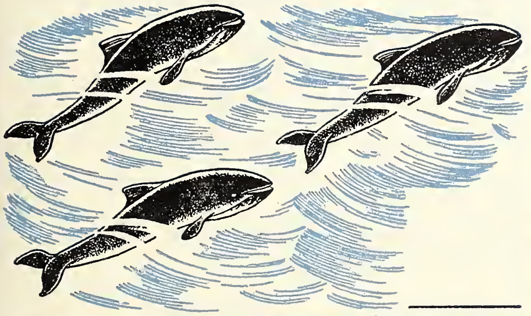
7	7	7				

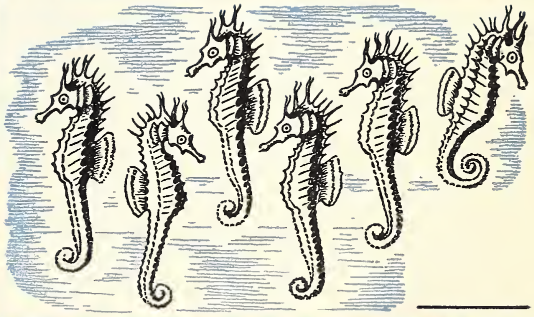


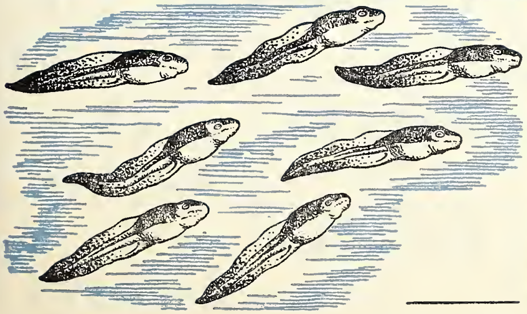


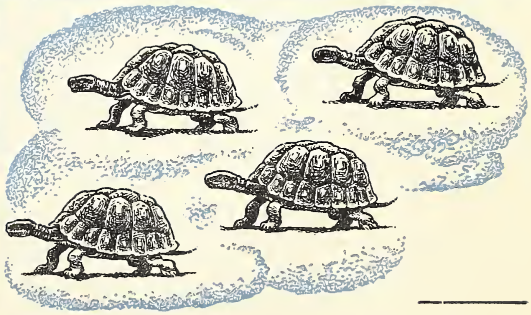












LEARNING ABOUT THE NUMBER EIGHT

Preparatory Activities

The next three pages of the pupil's book are planned to help the children learn more fully the meaning of the number *8* and develop an understanding of the relationship between the number *8* and the numbers *1* to *7*. On page 29 the children will learn to differentiate between pictures with 8 objects and pictures with fewer than 8, and will make pictures to show what *8* means.

Using realistic experiences. Actual classroom experiences may be used to introduce the symbol *8*. For example, there may be 8 children in a reading group. The teacher may need 8 children to help make a frieze or serve as monitors while the class goes to see a new pet or a new house under construction. After the children have identified several groups of 8, the symbol *8* may be written on the blackboard and the children asked to tell what it is.

Using concrete objects. Next, several groups of chairs, books, blocks, boxes, or packages of paper, ranging in number from 2 to 8, may be arranged. The children may find which of the groups have 8 things in them. Then the teacher may put groups of from 2 to 8 small objects on the children's desks. They may identify the groups of 8.

Using Page 29

Develop the idea that the things in the picture are all for a party. Let the children name the things in the pictures. Then have them draw lines from the symbol *8* to each picture that has 8 things in it. Next, tell them they may make 8 balloons for the party by drawing them in the box at the bottom of the page.

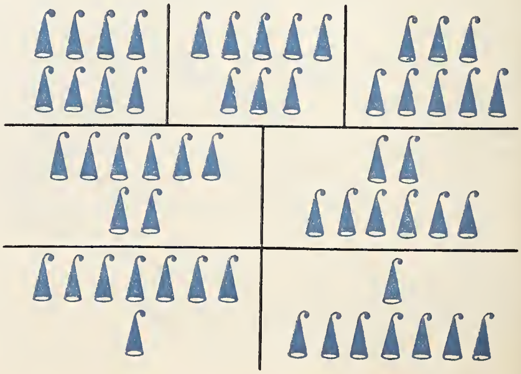
Follow-up Activities

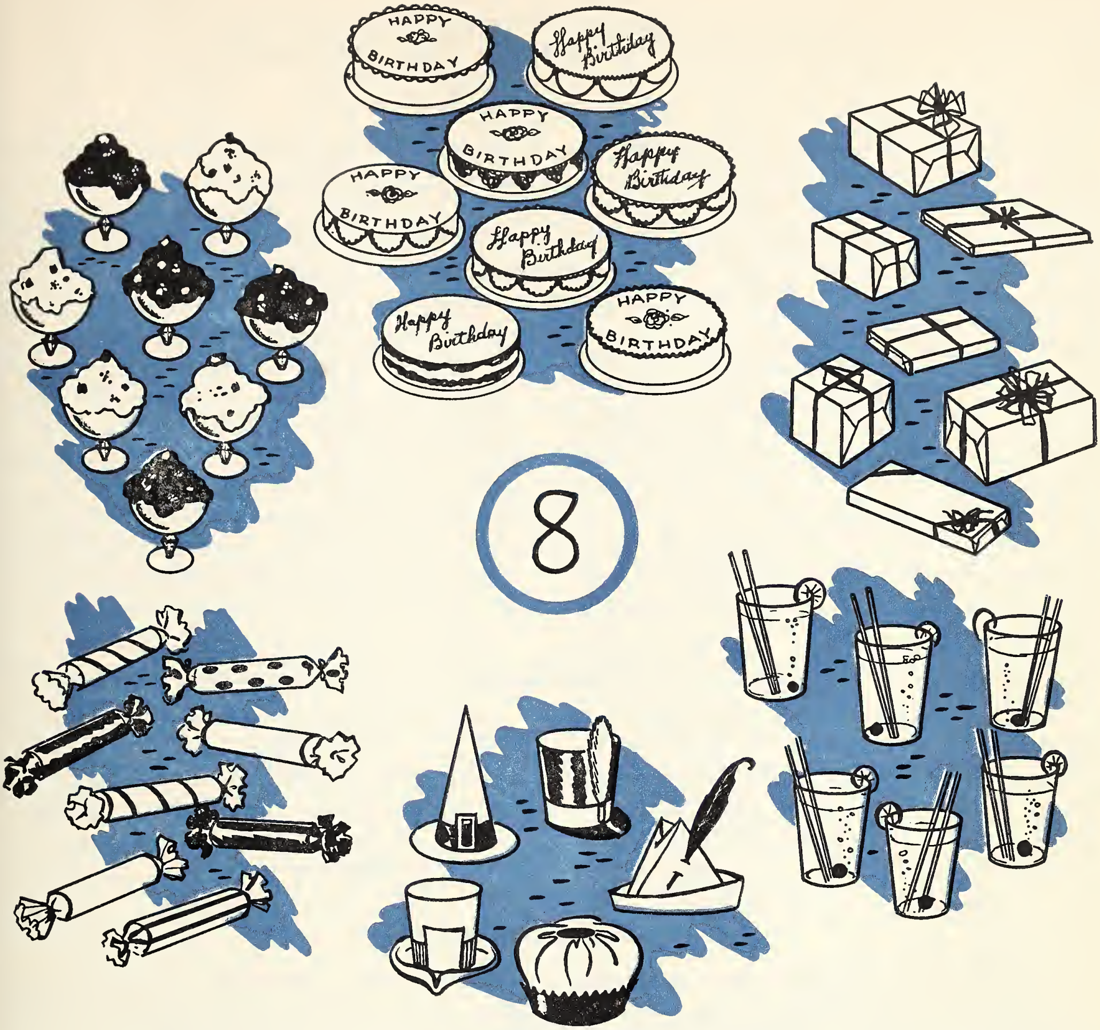
Additional learning helps. If there are any children who did not seem to understand the meaning of the number *8*, they may be helped to count several groups of concrete objects with 8 in each group. First, the children may work together with such objects as pennies, books, pencils, boxes of crayons. Then each child may work at his desk with his small counting objects to build groups of 8, and to select groups of 8 from among groups with 2, 3, 4, 5, 6, 7, and 8 objects in them.

It may help these children to make kinesthetic responses also. For example, the teacher may clap rhythmically: 1–2–3–4–5–6–7–8; 1–2–3–4–5; 1–2–3–4–5–6–7–8; 1–2–3–4; etc. The children may make marks as the teacher claps. When they have heard 8 sounds and have made 8 marks, they may say, "eight."

Next, the children may be given pictures that have been cut from discarded magazines, and asked to identify all of the pictures that have groups of 8 things in them. Finally, they may make cards with pictures of 8 toys, or cookies, or other things on them. For example:

Enrichment activities. The children who do not need help at this time may wish to make pictures similar to the one below to show arrangements of 8:




HAPPY BIRTHDAY
Happy Birthday
HAPPY BIRTHDAY
Happy Birthday
HAPPY BIRTHDAY
Happy Birthday
Happy Birthday
HAPPY BIRTHDAY
8

Learning about the Number Eight (continued)

Preparatory Activities

The next learning step for the children is to develop a further understanding of the relationship between the number *8* and the numbers *1* to *7*. Provision is made for this step on page 30 by having the children increase smaller groups to 8 and isolate groups of 8 within larger groups.

Using concrete experiences. Several groups of large objects, such as books, rulers, chairs, pictures, and pencils, ranging in number from 1 to 8, may be arranged around the room or on a table. The teacher may ask such questions as:

Are there more chairs than pictures? Are there as many pencils as rulers? etc.

Then various children may be asked to get more objects in order to increase to 8 each group of fewer than 8.

Next, 10 books and 9 rulers may be placed on a table, and the children asked to take 8 things out of each group.

Following these experiences with large objects, each child may use his small counting objects so that he can repeat the experiences independently. For example, each child may place on his desk, in separate piles, a single object and groups containing from 2 to 10 objects. He may add objects to the piles containing fewer than 8 objects until there are 8 objects in each pile; and he may remove groups of 8 from those piles which have more than 8 objects in them.

Using Page 30

Call attention to the ice cream cones at the top of the page. Point out that there are fewer than 8 ice cream cones in each picture. Then tell the children to draw more ice cream cones so that there will be 8 of them in each picture.

Have the children identify the party horns and the cupcakes. Ask if there are more than 8 party horns and more than 8 cupcakes. Then have the children put a line around 8 of the horns and another line around 8 of the cupcakes.

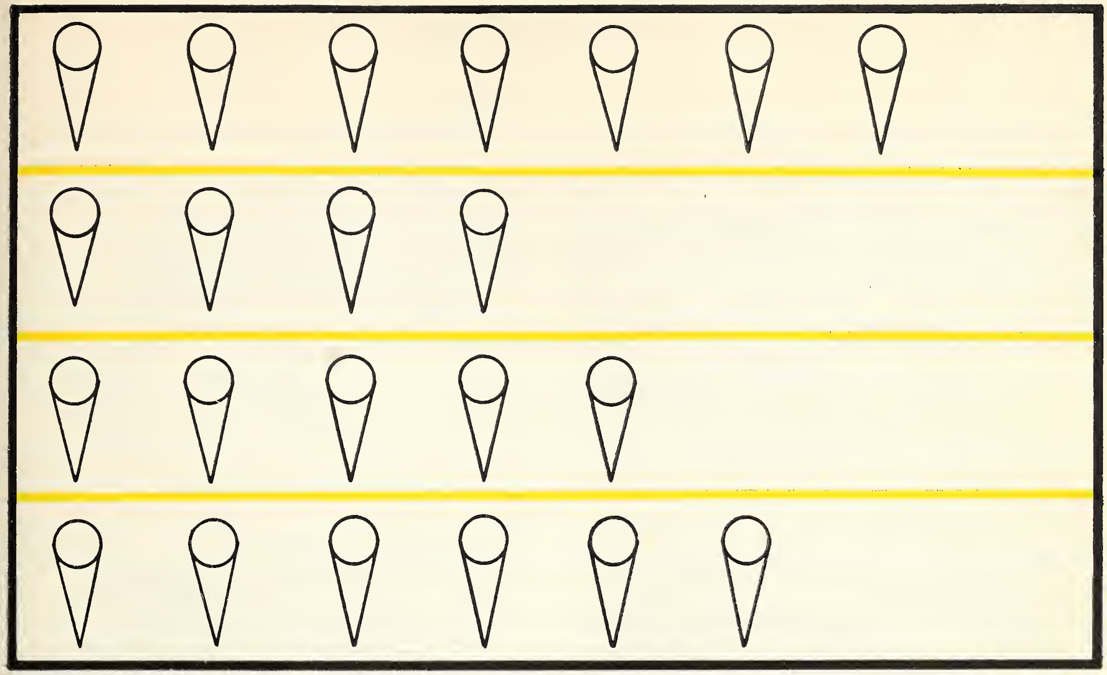
Follow-up Activities

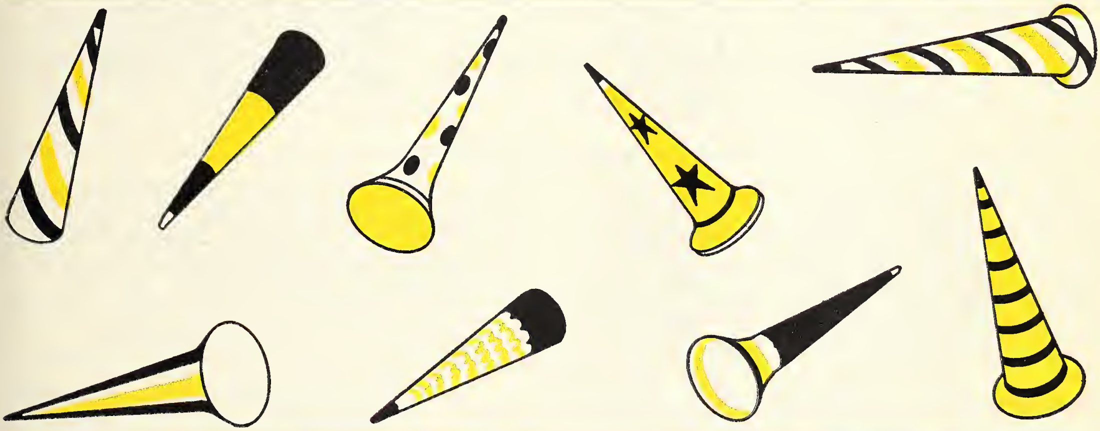
Additional learning helps. As the teacher examines the children's work, she will find which children, if any, need further help in understanding the relationship between the number *8* and the numbers *1* to *7*. Those who need help may be given more experiences with concrete objects. At first, the children may work with large objects, as suggested in the preparatory activities above. Then each child may use his small counting objects to repeat the experiences of increasing smaller groups to 8, and removing groups of 8 from groups of 9 and 10.

The children may take turns striking a triangle, tapping a bell, or bouncing a ball. One child may bounce the ball 6 times, and then ask another child to bounce it as many times more as are needed to make 8 bounces in all. Then two more children may have a turn, and then two more, and so on. The children who are watching may make marks with their pencils as they hear the sounds. They may serve as "score keepers" to make sure that the game is played as it should be played.

Then the children may work on a supplementary exercise similar to that in their books. The teacher may give them mimeographed or hectographed papers with pictures of circles, squares, or toys. The pictures should show from 1 to 10 objects. The children may draw more objects so that there are 8 in each group. They may put a ring around 8 objects in the groups that have more than 8 in them.

Enrichment activities. The faster learners may wish to make sets of cards for the number 8 for the matching game. Some may wish to make pictures for their folders or their scrapbooks.





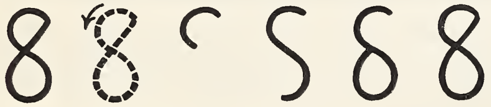
Learning about the Number Eight (continued)

Preparatory Activities

The children are now ready to learn how to write the symbol *8* and to use it, along with symbols learned previously, to indicate the number of things in groups of various sizes. Page 31 of the pupil's book provides for these experiences.

Using blackboard experiences. The symbol *8* is difficult for many young children to write. The teacher will wish to give ample opportunity for the children to get a clear image of the number and to practise writing it before they use the exercises in their books.

It may be helpful to give a demonstration at the blackboard, using a very large *8* as a model. The teacher may show how the *8* is made by breaking the demonstration down into several steps, as indicated here.



Then the teacher will wish to provide large models for the children to trace. It sometimes helps to have the children stand back from the model and pretend to trace it, writing in the air several times before they actually trace the model. Each child should have a chance to make the *8* three or four times after he has shown that he knows how to write it.

After all of the children have had an opportunity to write the *8*, several children may go to the blackboard and draw pictures of trees, apples, eggs, toys, etc. The teacher may whisper to each child the number of things he is to make. Then the other children may take turns finding how many things there are in each picture and writing the number that tells. The children at their seats may check to see if the correct numbers are written, and if they are written properly. Then all of the children may work at their desks, making similar pictures for each other and writing the numbers.

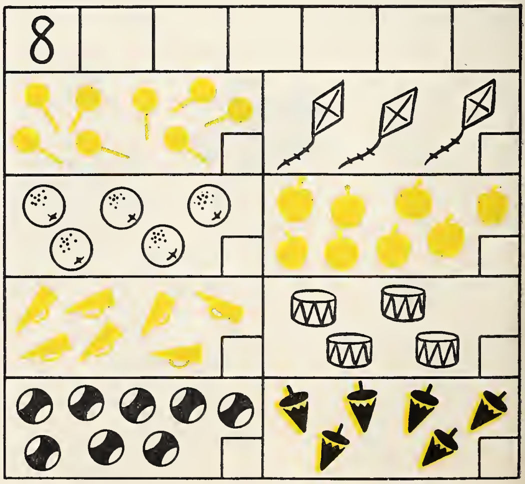
Using Page 31

The teacher should find the children ready for the exercises on this page if they were successful with the preparatory activities. The children may trace the models of the *8* and write it in the four boxes. Then they may identify the pictures of things for the party, find how many of each thing there are, and write the number.

Follow-up Activities

Additional learning helps. It is likely that some of the slower learners will need more help in learning to write the symbol *8*. Some of them may need help also in associating the number symbols with the number of things they represent.

The teacher will wish to work with the children who need help, both as a group and as individuals. It will probably be best to begin with blackboard work. Then the children may work at their desks or at a large table. The experiences outlined as preparatory activities may be used again. Then the teacher may wish to provide a supplementary exercise, similar to the following, which may be hectographed or mimeographed.



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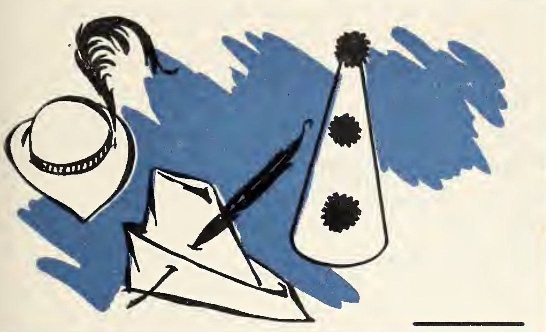

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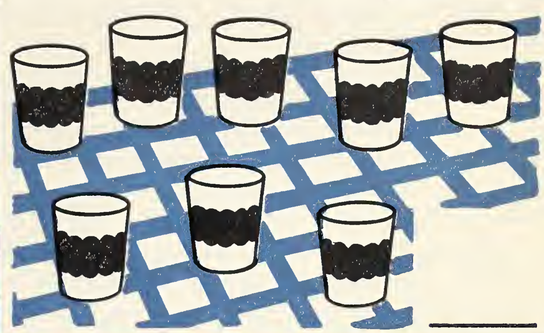

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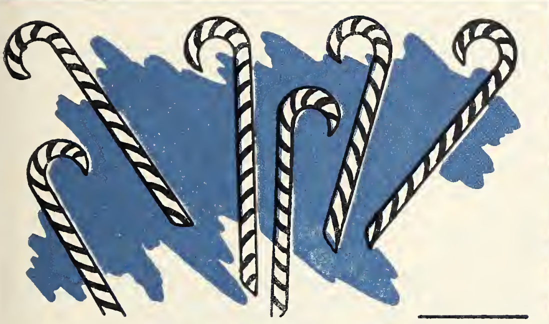

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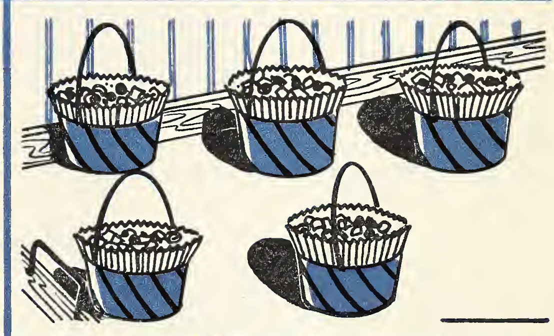

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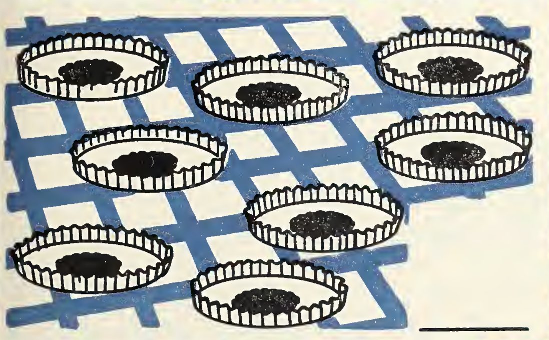

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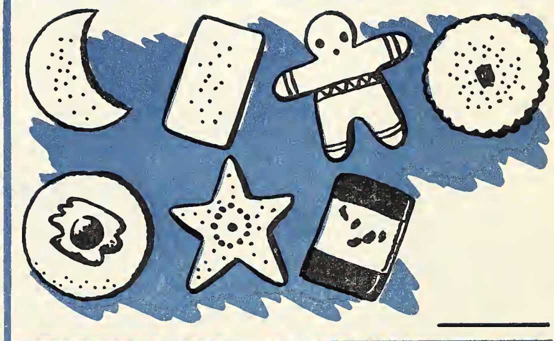

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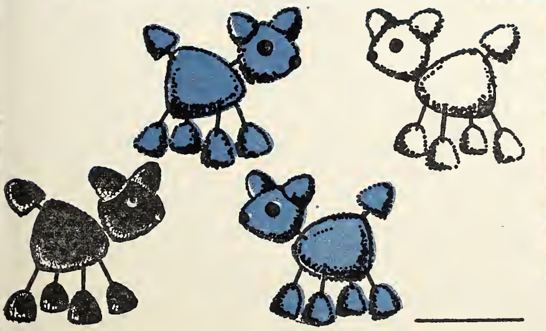

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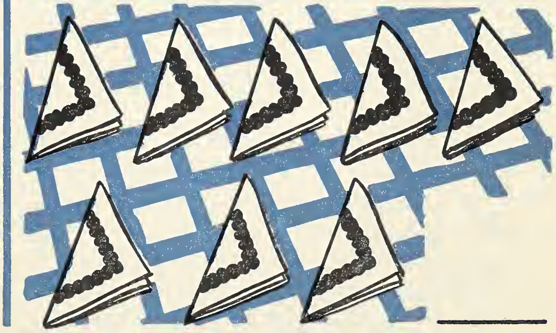

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POSITIONAL TERMS: *OVER* AND *UNDER*

Preparatory Activities

The positional terms *over* and *under* will be needed by the children in understanding and carrying out directions later. Exercises are provided on page 32 of the pupil's book for the purpose of helping them learn the terms and attach meaning to them. The children will not be asked to read these terms at this grade level, but merely to understand them and use them orally.

Utilizing classroom experiences. The teacher may find it possible to introduce the terms *over* and *under* in connection with classroom activities. For example, paper or oilcloth mats may be needed under the flowerpots. A piece of screen may be placed over the aquarium. The turtle may crawl under the stones in the aquarium. A picture may be hung over a bookcase.

Stories and poems may serve as sources of illustrative material. For example: Peter Rabbit crawled under the fence to get out of the garden. Jack jumped over the candlestick. Little Boy Blue was under the haystack.

Using concrete experiences. After the terms are introduced and defined, the children may be helped to understand them in the way they will be used later. For example, they may be told to put three books in a pile on their desks, with the music book under the reader and the storybook over the reader. They may toss a ball over the desk, then under the desk. They may lay a fresh piece of paper over the top of the table. They may write the number 5 and then write a 3 under it, or draw a house with a cloud drifting over it, or draw a cup with a saucer under it, etc.

Using Page 32

Call attention to the picture of the bush. Then ask the children what they see under the bush in the picture and what they see over it. Get from them, through discussion, the statement that a bird is flying over the bush and another bird has found a worm under the bush. Have the children draw a line around the bird that is over the bush. Have them put an X by the bird that is under the bush.

Then call attention to the bridge. Have the children draw a picture of an airplane flying over the bridge. Have them draw a boat sailing under the bridge.

Follow-up Activities

Additional learning helps. It is unlikely that any except the very slowest learners will need help with the terms *over* and *under*. However, if there are children who do not seem to understand the terms as they are used in the exercises in their books, further experiences may be provided.

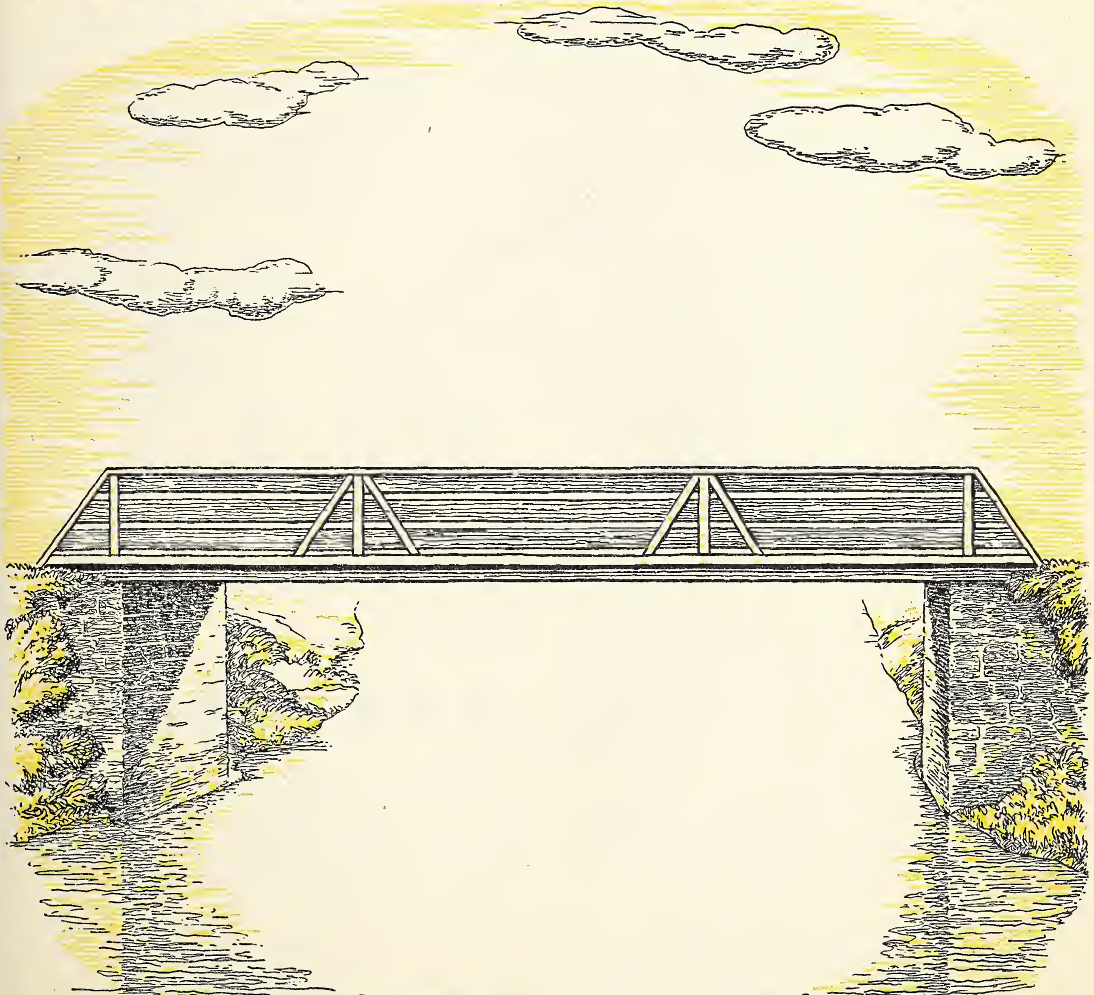
The teacher may give such directions as the following:

Hold a book over your head. Hold the book under your desk. Put your hands on the desk with the right hand over the left. Now put the right hand under the left.

The teacher may draw three squares on the blackboard, arranged vertically and with the middle square larger than the other two. The children may put an X on the square that is under the larger square, and a √ on the square that is over the larger square.

The children may be asked to draw a circus tent with a flag flying over the tent and a clown peeking out from under the tent. Then they may be asked to draw a fence with a dog going under it and a boy climbing over it.

Enrichment activities. The children who do not need help at this time may look at pictures in books and magazines to try to find some that show what is meant by the words *over* and *under*. Those children who are making scrapbooks may draw their own pictures to show what is meant by the words.



LEARNING ABOUT THE NUMBER NINE

Preparatory Activities

The next three pages of the pupil's book provide materials that are planned to help the children extend their understanding of the number 9 and learn to write the symbol 9. The relationship of the number 9 to the numbers *1* to *8* will also be shown. On page 33 material is provided to help the children identify pictures that have 9 things in them and associate these groups of 9 with the symbol. Then they will draw pictures to show the meaning of 9.

Utilizing realistic experiences. The teacher may be able to introduce the symbol 9 and relate it to a group of 9 through a realistic classroom activity. For example, there may be 9 children who are wearing something blue, or something red. Nine children may be needed for a play. Perhaps there are 9 books on the reading table.

The teacher may call 9 children to the front of the room and arrange them in a group. The symbol 9 may be written on the blackboard. Someone may tell what it is. Then the teacher may explain that it means the same thing as the word *nine.*

Using concrete experiences. Several groups of 9 large objects, such as toys, blocks, or books, may be arranged around the room. The children may find how many there are in each group. Then groups of 2 to 9 may be arranged, and the children may point out the groups of 9 things.

These experiences may be repeated by having each child use his counting objects at his desk. At first, he may make groups of 9. Then he may place groups of 2 to 8 on his desk and compare them with groups of 9 so that he may see the relationships.

Using Page 33

The children may first discuss the pictures. The things shown in the pictures may be identified if desired (pine cones, elm leaves, maple seeds, walnuts, white oak leaves, and acorns). Then the children may find which pictures show groups of 9 and draw lines from the 9 to each of those groups.

Next the children may be asked to draw 9 leaves, such as the following, in the box at the bottom of the page.

Follow-up Activities

Additional learning helps. If some of the children seem to need more opportunities to learn to recognize groups of 9 and to associate the symbol with 9 objects, the teacher may repeat some of the experiences with large objects. Then the children may use their counting objects again as suggested for preparatory activities.

It may be helpful to have these children count as they clap in rhythmic pattern, or make strokes with a pencil as the teacher counts or claps.

Pictures of groups of 2 to 9 things may be found in magazines or drawn on the blackboard. The children may identify the groups of 9 in the pictures.

Each child may make a study card with pictures of 9 things on it. For example, trees may be used.

Enrichment activities. The faster learners may wish to use counting blocks or make pictures to show as many of these arrangements of 9 as they can discover:

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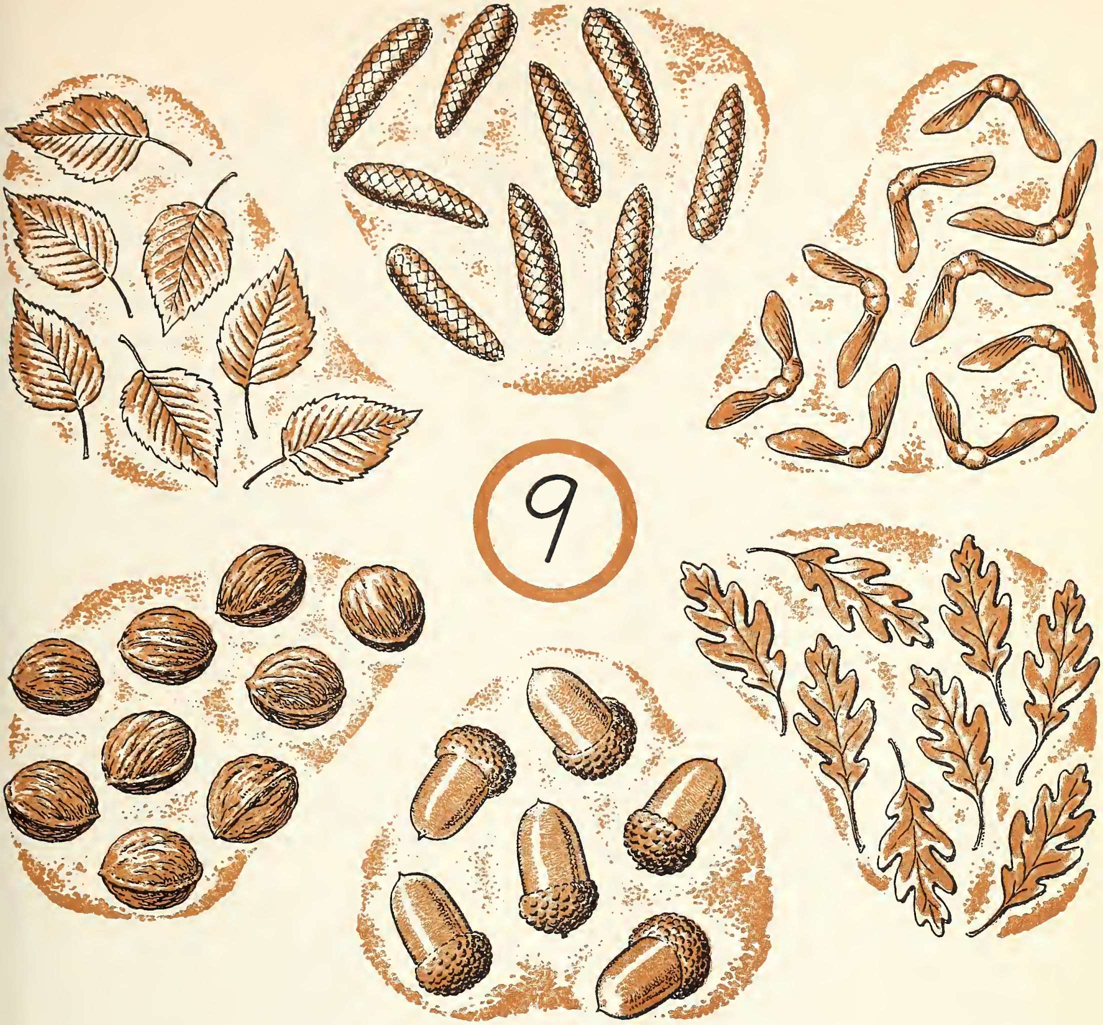
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Learning about the Number Nine (continued)

Preparatory Activities

The relationship of the number 9 to each of the numbers *1* to *8* is emphasized in the exercises on page 34 of the pupil's book. The technique used is that of increasing smaller groups to 9 and isolating groups of 9 within larger groups by drawing lines around them.

Utilizing classroom experiences. The teacher may find opportunities to develop the relationships between 9 and the numbers *1* to *8* through regular activities of the program. For example, if teams are being organized, there may be 9 children on one team and 7 on another. More children may be chosen so that there will be 9 on each team. If there are 6 chairs and 9 children, more chairs may be found so that there are 9 chairs. If there are 8 books and 9 children, more books may be brought so that there will be 9 books, etc.

Using concrete objects. Large objects, such as books, boxes, rulers, and pencils, may be arranged in groups varying in size from 2 to 11. The children may identify the groups of 9. Then they may bring more of the various objects so there will be 9 objects in each group that is smaller than 9. If there are more than 9 in a group, the children may take 9 objects out of the group.

Each child may repeat these experiences at his desk with his small counting objects. The children may be asked to place on their desks, in separate piles, groups of objects from 2 to 10 in number, and a single object. They may then be asked to put more objects with the groups of fewer than 9 so that there are 9 objects in each pile, and to move 9 objects away from the pile with 10 in it. The children should not count out a group of 11 at this time.

Using Page 34

The teacher may call attention to the pictures of trees at the top of the page. Such questions as these may be asked:

Are there more trees in the first row than there are in the next row? Are there as many as 9 trees in the first row? Are there more trees in the last row than there are in the first row? Are there as many as 9 trees in the last row?

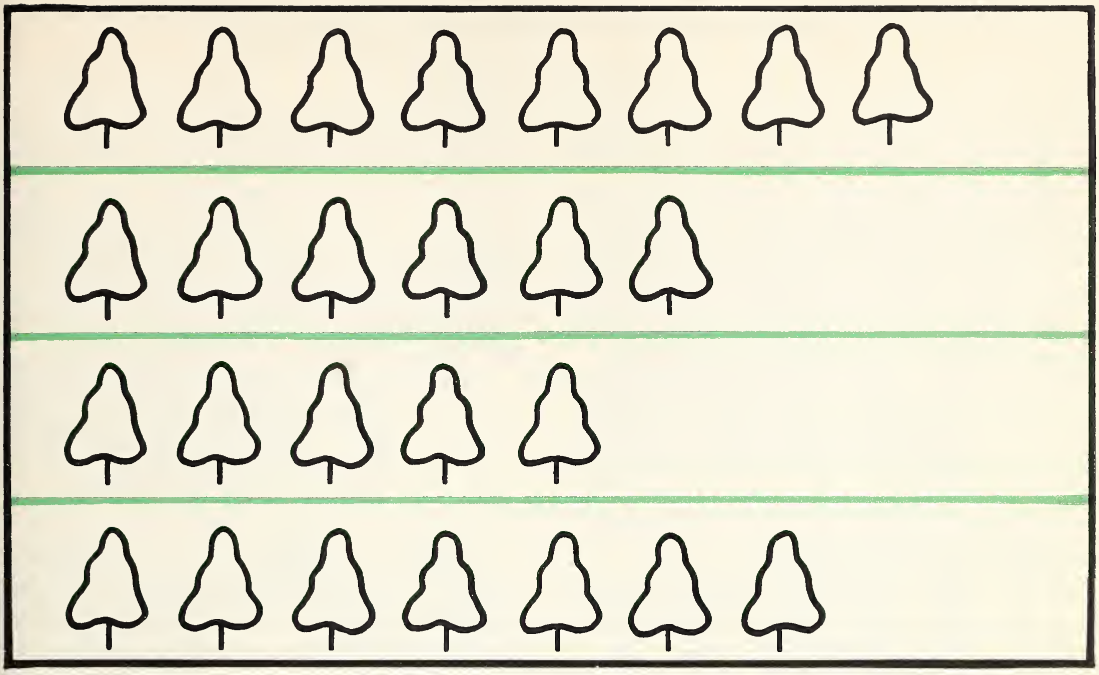
Then the children may be asked to draw more trees so that there will be 9 in each row.

The children may note that two kinds of leaves are shown (maple and white birch). Then they may be asked if there are more than 9 leaves in each picture. The children may make a ring around 9 of the leaves in each picture.

Follow-up Activities

Additional learning helps. If any of the children had difficulty in increasing smaller groups or decreasing larger groups to make groups of 9, the teacher may provide more experiences similar to those suggested as preparatory activities. Large objects may be used first. Then the children may use their counting objects again to carry out the activities individually at their desks. At this time they may begin with a group of 8 objects and increase it to 9; then place 7 objects on the desk and increase the number to 9; etc., to show the relationship between the other numbers and 9. The teacher may draw small groups of objects on the blackboard, or hectograph or mimeograph pictures of objects, and let the children draw more so that there are 9 in each group.

Enrichment activities. The faster learners may find other things to do at this time. They may be interested in making toy money to use later in learning about the coins. If make-believe money is available, the children may wish to use it to show how much they need to buy things that cost 1 cent, 3 cents, etc.

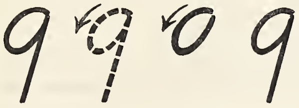


Learning about the Number Nine (continued)

Preparatory Activities

The children are ready at this point to learn how to write the symbol 9 and to use it. Page 35 of the pupil's book provides material for these experiences.

Using blackboard experiences. It is rather common for children to confuse the symbol 9 with the symbol 6 when they are learning to write the figures. A carefully planned demonstration may prevent the children from making this mistake. The teacher may write the 9 on the blackboard and show the children where we begin to write it. She may tell them that we can remember how to make the 9 because we make the "balloon" first, and then put the stem on it.



Several 9's may be written on the blackboard for the children to trace. The children may first try writing the 9 in the air, then trace the models, and finally write the 9 three or four times. The children who worked at the blackboard may practise at their desks with large unlined pieces of paper while the other children work at the blackboard.

When the teacher is sure the children know how to write the 9, several children may be handed a card with a number on it. Each child may draw a picture on the blackboard with the number of things in it that the number card indicates. Then other children may find how many things are in each picture and write the number under the picture. The children at their desks may check to see that the proper numbers were written, and that they were written legibly and correctly.

Using Page 35

The children may trace the models. Then they may write the figure 9 in each of the four squares.

The teacher will next help the children identify the squirrels, owls, mice, woodpeckers, rabbits, ruffed grouse, chipmunks, and fawns in the pictures. Then the children may determine the number of creatures in each picture, and write the number symbol in the blank in the corner of the picture.

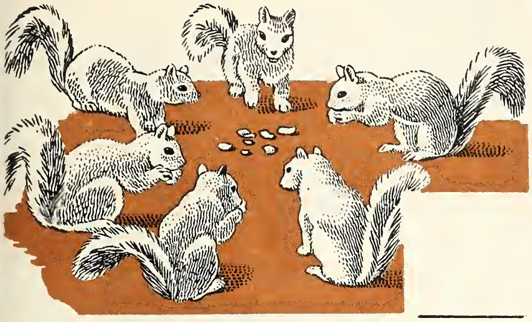
Follow-up Activities

Additional learning helps. The teacher will wish to examine each child's work to find what difficulties, if any, were encountered. If there are children who need more help with the number 9 or with other numbers, some of the experiences suggested as preparatory activities may be repeated. The children may then be given models of the numbers. They may practise writing the numbers after they have traced the models.

If the difficulty is in associating the symbols with the pictures which show what the numbers mean, the children who had trouble may work with concrete objects at their desks. For example, the teacher may give each child cards with whatever numbers he is not sure of written on them. He may put on his desk the number of objects indicated by each card, and place the card by the proper group. These children may then find the cards that illustrate the meaning of the numbers. They may match these cards with the number cards.

Enrichment activities. The children who do not need help may find other things to do. Some of them may wish to make a picture of 9 objects and write the symbol. This picture may be kept in their scrapbooks or folders. Others may wish to add the 9, with pictures to show what it means, to the chart for the bulletin board. Still other children may make cards for the number 9 to add to the set for the matching game for the arithmetic table.

9	9	9				



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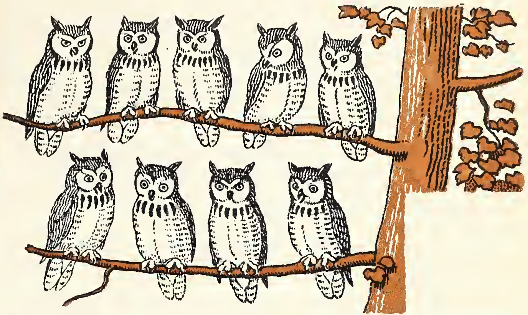

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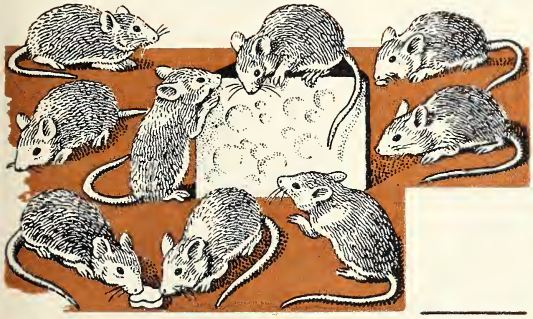

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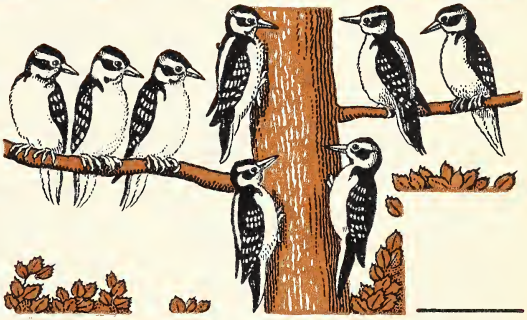

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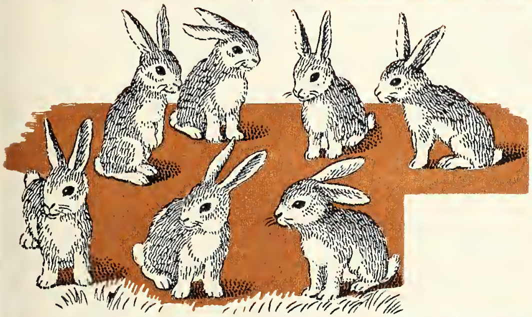

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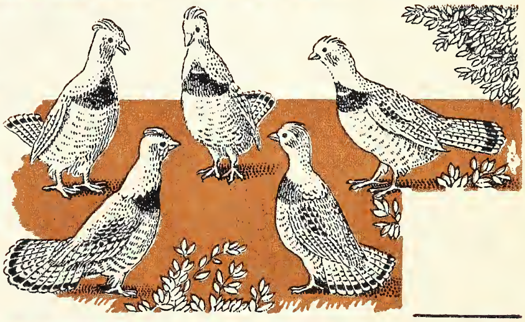

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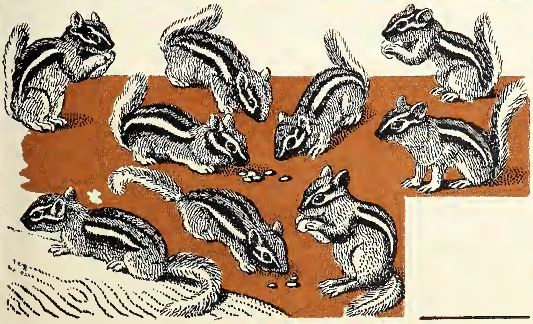

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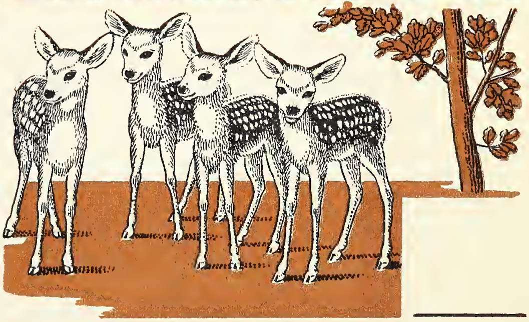

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LEARNING ABOUT THE NUMBER TEN

Preparatory Activities

The next three pages of the pupil's book were planned to help the children learn more fully the meaning of the number *10,* and develop to some extent an understanding of the relationship of *10* to the numbers *1* to *9.* Page 36 helps them learn to differentiate between groups of 10 and smaller groups. Then they draw pictures to show what the number *10* means.

Utilizing realistic experiences. It may be possible for the teacher to plan a realistic classroom activity for use in introducing the number *10.* For example, a group of 10 children may be needed to rearrange the arithmetic materials or to move and straighten the reading corner. If such an opportunity does not present itself, the teacher may arrange a group of 10 children at the front of the room. After the group has been counted, the teacher may write the number *10* on the blackboard and ask the children, or tell them, what it is.

Using concrete objects. Groups of 10 objects may be counted. These may be toys if they are available, or books, blocks, boxes of materials, etc. Then several groups of objects, varying in number from 2 to 10, may be arranged. The children may find and identify all of the groups that have 10 things in them. The groups may be compared by asking questions such as these:

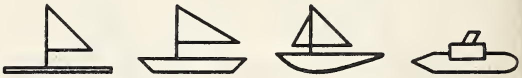
Are there more blocks than books?
Are there more boxes than books?
Are there as many rulers as pencils?

The children may use their small counting objects to build groups at their desks. They may make a pile with 10 objects, another with 6, another with 8, another with 10, etc. Then they may identify each group that has 10 in it.

Using Page 36

The children may be helped to identify the things in the pictures, all of which are found or used at the beach. They may count to find each group that has 10 in it and draw a line from the symbol *10* to the group.

Then the children may draw 10 boats in the large box. Simple line drawings such as these may be used.



Follow-up Activities

Additional learning helps. If any of the children had difficulty finding or making groups of 10, they should be helped to understand what the number means. They may count objects in groups, beginning, perhaps, with 5, and gradually building up to 10. Leaving the smaller groups on the desk as they build larger groups up to 10 helps the children get the concept that 10 is more than 5, 6, or 7, etc.

Tapping, clapping, or making marks with a pencil as they count to 10 is also helpful.

The children should try again to identify groups of 10 among pictured groups of varying sizes. Pictures from magazines may be used, or the teacher may draw the pictures.

Enrichment activities. The children who do not need help at this time may be interested in using their counting objects to make as many arrangements of 10 as they can. Or, if they prefer, they may make pictures. These arrangements may be discovered:

○○○○○○○○○ ○	○ ○○○○○○○○○	○○○○○○○○ ○○
○○○○○○○ ○○○	○○○ ○○○○○○○	○○ ○○○○○○○○
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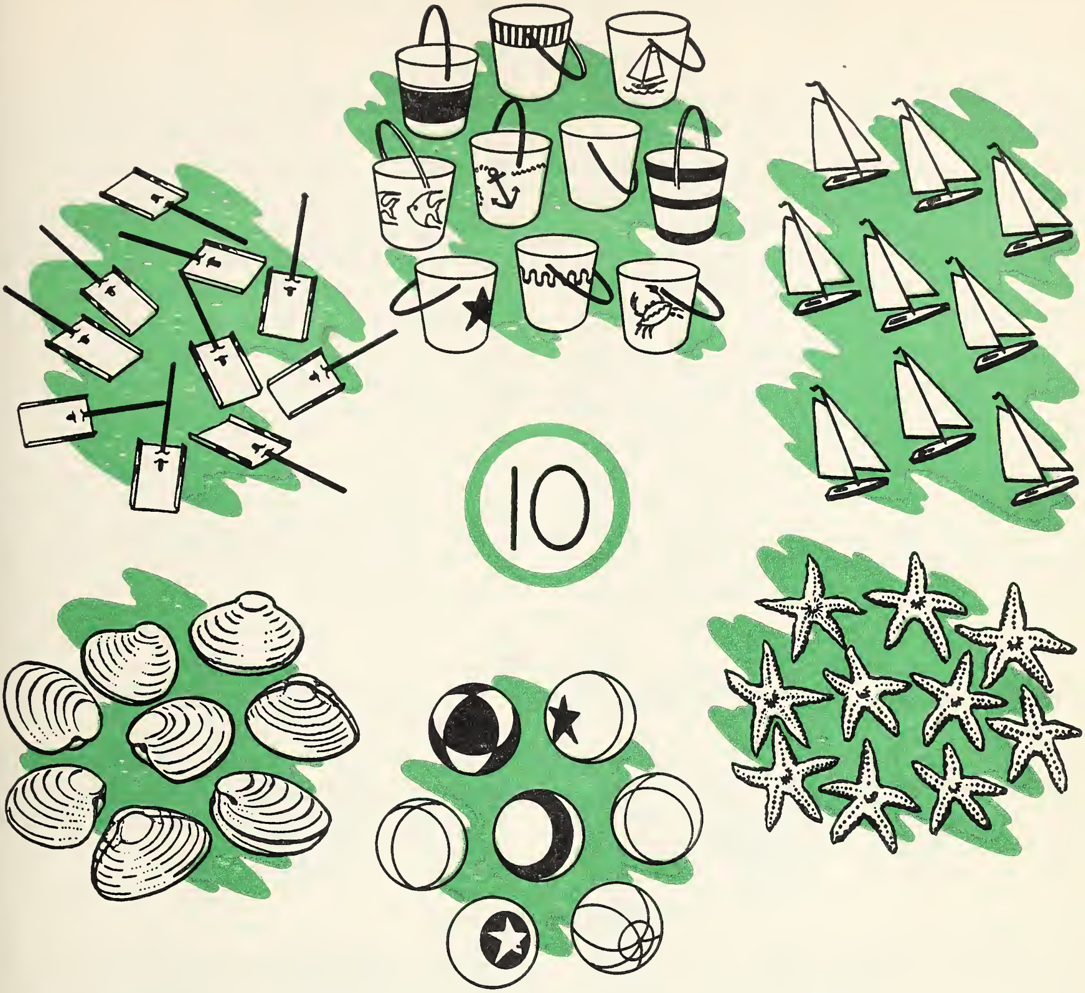
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Learning about the Number Ten (continued)

Preparatory Activities

The children may further extend their understanding of the relationship of the number *10* to the numbers *1* to *9*. Page 37 of the pupil's book provides for this learning experience by means of exercises in which the children increase smaller groups to make groups of 10 and isolate a group of 10 within larger groups.

Utilizing realistic situations. The teacher may ask a group of 10 children to sit in chairs at the front of the room. There may be 8 chairs, so that the children must get more to have 10 chairs. A child may be given 6 books for the group and told to get more so that there are 10 books. Then a child may be given 9 pencils and told to get more so that there are 10. Groups of 7 rulers, 5 pieces of paper, and 4 crayons may be increased to 10. Then 12 books and 11 rulers may be arranged in groups, and the children may take 10 out of each of these groups.

Using concrete objects. Each child may have the experience of increasing smaller groups to 10, using his counting objects. Ask the children to place on their desks 9 counters. Have them put more counters with the group so that there are 10. Repeat the activity with 8 counters, then with 7, and so on, to 1 counter.

The teacher may then place on each desk a pile of 12 counters and a pile of 11 counters, and ask the children to take 10 counters out of each pile or to put their hands around 10 of the counters.

Using Page 37

Call attention to the shovels at the top of the page. Ask:

Are there more shovels in the top row than in the next row? Are there more in the top row than in the bottom row? Are there as many as 10 shovels in the top row? etc.

Then have the children draw more shovels so that there are 10 in each row.

Ask the children if there are more than 10 pails and more than 10 umbrellas. Have them make a ring around 10 of each type of sand toy.

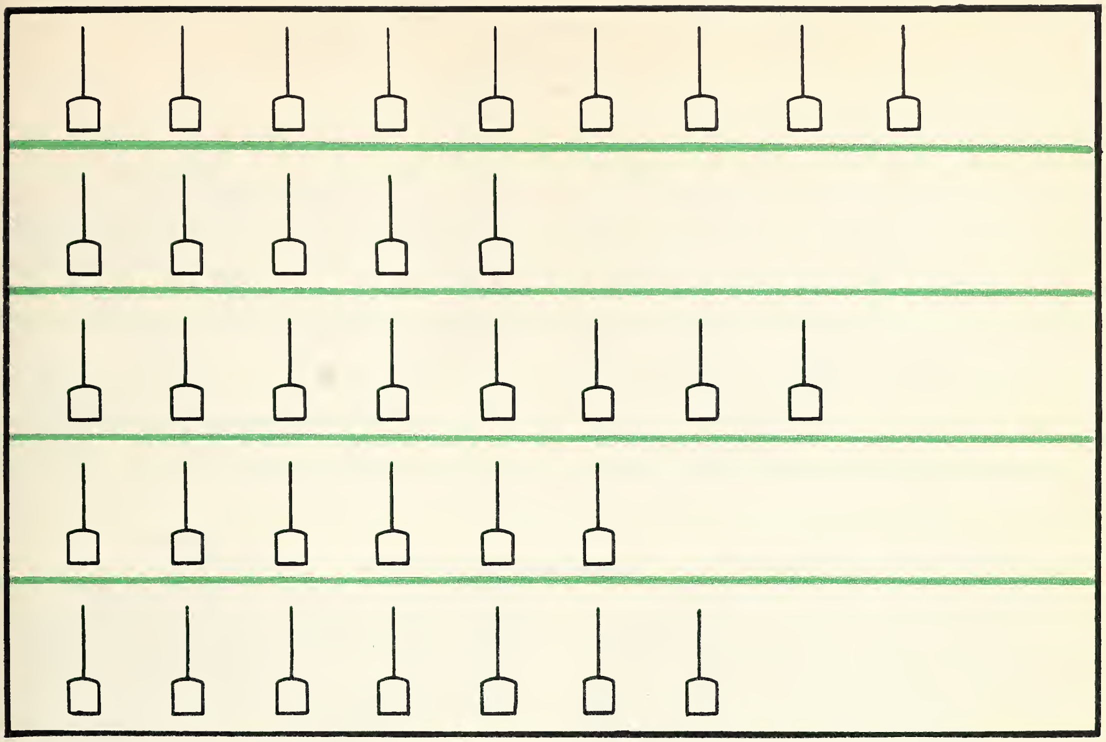
Follow-up Activities

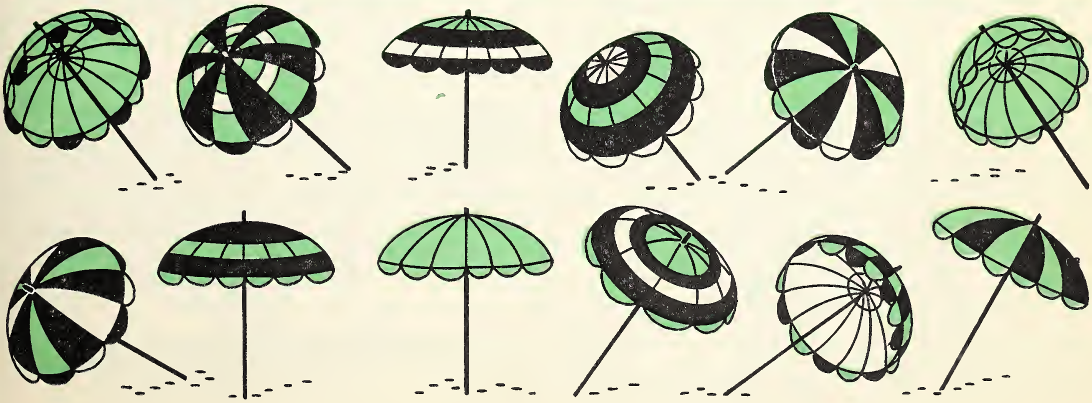
Additional learning helps. The teacher will look over the work carefully to find if there are any children who had difficulty with the exercises. If some children need help in increasing groups to 10 or in finding groups of 10 within larger groups, they may repeat the concrete experiences suggested as preparatory activities.

Activities requiring kinesthetic responses may also help these children to understand the meaning of *10* and its relationship to the other numbers. For example, the teacher may bounce a ball and the children make a mark with a pencil each time they hear the ball hit the floor. Each time the teacher stops, the children may count the marks they have made, and make more marks if more are needed to increase the group to 10. By varying the number of times she bounces the ball, the teacher can give the children all the possible experiences in increasing smaller groups to 10.

Simple drawings to illustrate the numbers *1* to *9* may be made on the blackboard or mimeographed by the teacher. The children may try again to draw more of each object so that there are 10 in each group. If toys or animals are too difficult for the children to draw, triangles, squares, diamonds, or circles may be used. The teacher may make drawings of 11, 12, or 13 objects. The children may make a line around 10 objects in each group that is larger than 10.

Enrichment activities. The children who do not need help at this time may look on the arithmetic table for pictures of things that cost 10 cents or pictures with groups of 10 toys, animals, etc., in them.





Learning about the Number Ten (continued)

Preparatory Activities

Learning to write the number *10* and to use it along with symbols learned previously is the next learning step for the children. Exercises for these experiences are provided on page 38 of the pupil's book.

Demonstrating the way to write *10*. The teacher will wish to show the children how to write the *10*, pointing out that the *1* is to be at the left and the *0* (zero) is to be at the right. They need to be shown that some space must be left between the *1* and the *0*. Care should be taken to have the children say "zero" instead of "oh," or "naught," or "ought." It is well to establish the right habit and introduce the term which is mathematically correct from the very first.

Models of the *10* may be written on the blackboard to show how the number is made. The children may practise writing the number "in the air." Then they may write it on paper three or four times.

Associating the *10* with a group of 10 things is the next step. Pictures showing 1 to 10 things may be displayed. The children may find how many there are and write the number on the blackboard.

Using Page 38

The children may trace the models of the *10*. Then they may write *10* in each of the four squares at the top of the page.

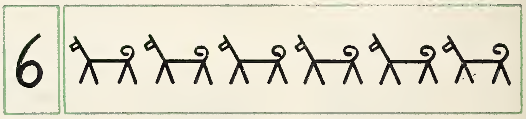
The pictures of the various things to eat at the beach or in the park may be identified. Then the children may find how many things there are in each picture, and write the number in the blank.

Follow-up Activities

Additional learning helps. It is not likely that any child had difficulty in writing the *10*. However, some of the slowest learners may need more help in using the number to show how many things there are in groups. If some children do need help, they may write each of the numbers from *1* to *10* on a separate card. Then they may find groups around the room and place the cards by the groups to show how many things there are in each group. For example, there may be 2 plants in a window, 3 children at the arithmetic table, 1 chair at the teacher's desk, 5 books on the teacher's desk, 10 shells in a box, 4 fish in the aquarium.

The cards may then be placed on the children's desks in miscellaneous order, and the children asked to place counting objects beside each card to show what the number on the card means.

As the numbers were introduced, it was suggested from time to time that the children make cards with pictures to show what the numbers mean. They may now play a matching game with those cards and the number cards they just made. The "game" is to match the number card with the picture card.

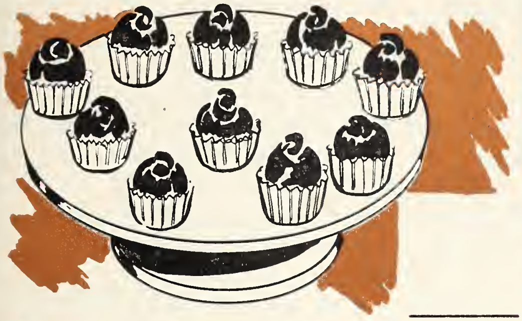


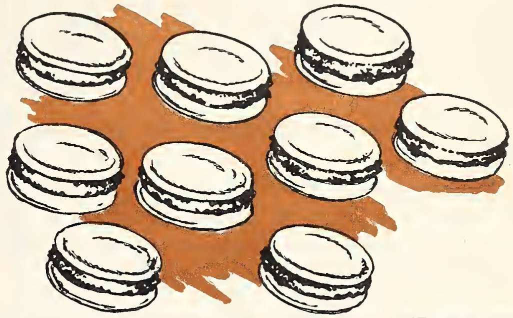
Enrichment activities. The children who do not need help at this time may check their folders or scrapbooks to see if they have included something for each of the 10 numbers. If not, they may add missing items now.

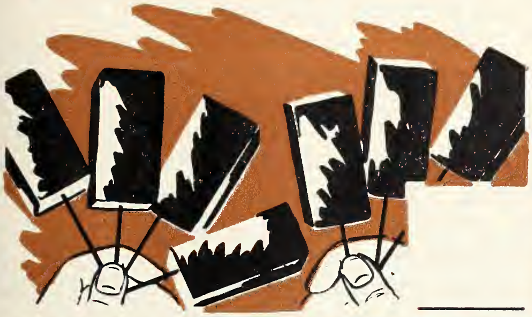
Some of the children who have made cards for the arithmetic table may wish to make cards for the number *10* at this time.

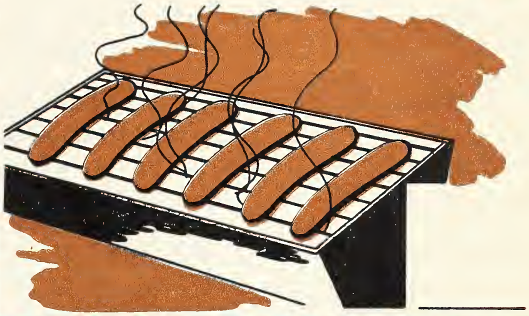
Some who have worked on the number chart for the bulletin board may wish to add the number *10*, with pictures to show what it means. For example:

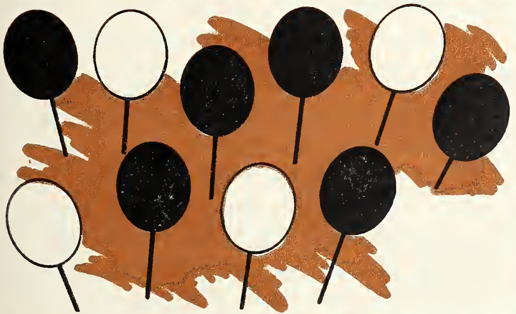
10	10	10				

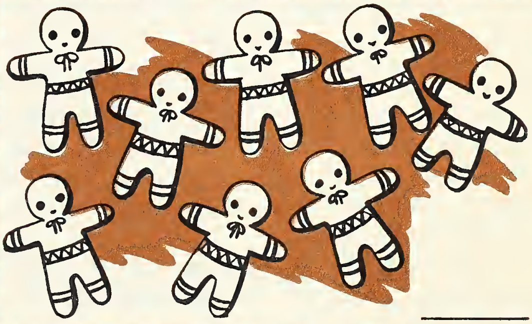


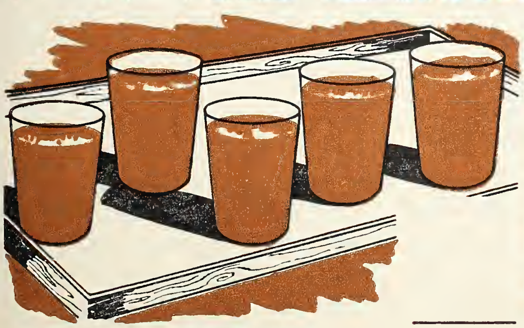


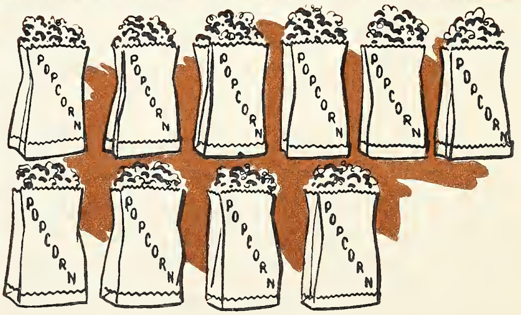








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PENNIES, NICKELS, AND DIMES

Preparatory Activities

Now that the numbers through 10 have been introduced, the children may learn the relationship between the penny and the dime. On page 39 these concepts are developed:

A dime is as much money as 10 cents, or 10 pennies.

Ten pennies will buy 10 one-cent items.

A dime will buy 10 one-cent items.

The relationship between the penny and the nickel is also reviewed on this page.

Utilizing realistic experiences. If possible, actual coins should be used to teach the recognition of the dime. If this is not possible, toy money that is realistic in appearance may be used.

Perhaps money has been collected for milk, for lunch, or for a fund drive. The pennies, nickels, and dimes may be placed on a table, and the children given turns at separating them, putting pennies in one pile, nickels in another pile, and dimes in a third pile.

Several things that cost a cent apiece should be displayed, for example: 10 one-cent stamps, 10 one-cent pieces of candy, 10 one-cent pencils or erasers. If the real items are not available, pictures cut from magazines or drawn by the children may be used.

The children may be told that 1 penny, or 1 cent, will buy 1 of these things. They may tell how many 5 pennies will buy. Then they may line up 5 stamps or 5 pieces of candy with a penny under each of them.

The children may be asked how many pencils they can get for a nickel. The fact that a nickel will buy as much as 5 pennies, or 5 cents, may be restated, and a child asked to show how many stamps or pieces of candy can be bought for a nickel.

Perhaps some of the children can tell that a dime is as much money as 10 cents, or 10 pennies. Then let them tell how many stamps or pieces of candy can be bought for 10 pennies, or 10 cents. Have a child arrange the 10 items with a penny under each item.

Then the children may be helped to understand that a dime will buy as many things as 10 cents, or 10 pennies, will buy. Have a child arrange 10 stamps or 10 pieces of candy with a dime under them.

Using Page 39

Explain that 1 penny will buy 1 marble. Ask how many pennies are pictured at the top of the page; and then ask how many marbles the 5 pennies will buy. Have the children write 5 in the box.

In the next picture, have the children draw marbles to show how many a nickel will buy, and write the number.

Tell the children that a dime is as much money as the pennies in the next picture. Have them count the pennies and write the number that tells how many pennies are as much money as a dime.

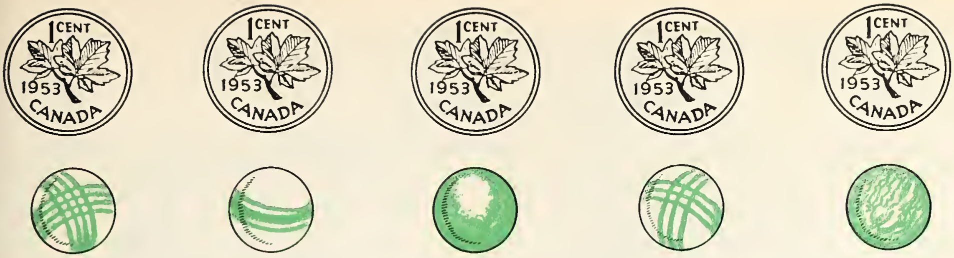
Point out that there are 10 pennies in the next picture. Have the children count the marbles and write the number that tells how many 10 pennies, or 10 cents, will buy.

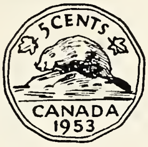
Explain again that a dime is as much money as 10 cents, or 10 pennies. Have the children draw marbles in the last picture to show how many a dime will buy. Then have them write the number in the box.

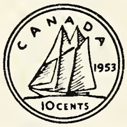
Follow-up Activities

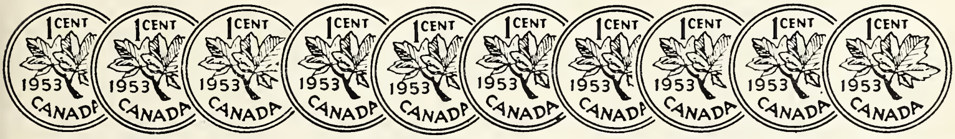
Additional learning helps. If some of the children had difficulty, they may repeat the preparatory activities. Then they may be helped to do the exercise in the book again.

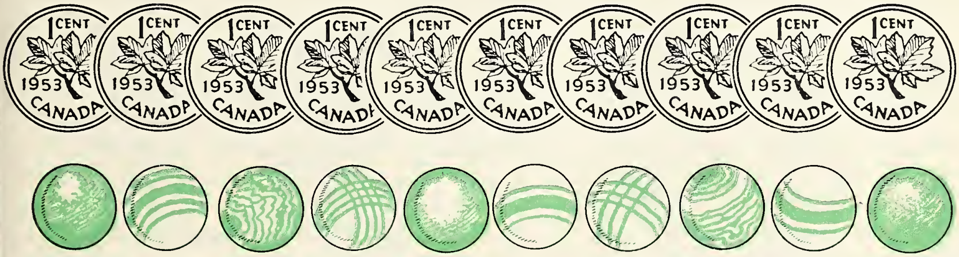
Enrichment activities. The children who do not need help may use toy money or coins they can make from manila tag to play store and bank. They may "buy" things that cost a penny, a nickel, or a dime. They may exchange pennies for nickels, nickels for pennies, pennies for dimes, or dimes for pennies at the play bank.

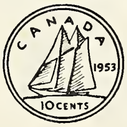












MAKING SURE OF COUNTING; WRITING NUMBERS

Preparatory Activities

The fourth and fifth "Making Sure" tests are provided at this time. The fourth test, which is provided on page 40 of the pupil's book, will enable both the teacher and the children to note the progress made so far in counting and in writing numbers.

Since this is a test for the purpose of discovering what help is needed by the group or by individual children before they go on to the next learning steps, the teacher will not provide preparatory activities. However, she may wish to tell the children that they will have a chance to use all of the numbers they have learned to write.

Using Page 40

The teacher may help the children identify the mice, squirrels, beavers, baby chickens, baby ducks, turtle, owls, frogs, fish, and chipmunks in the pictures. Then she may ask them to count to find how many there are of each animal, and then to write in the blank in the corner of the picture the number that shows how many there are.

Follow-up Activities

The teacher will wish to make a very careful evaluation of the work of each child on the test to find which number symbols he did not make legibly or correctly, and which numbers he is not sure of, either because he does not count accurately or because he does not associate the proper number symbol with that number of objects. These findings the teacher may note in the child's record. She may also note her ideas as to why he made the mistakes.

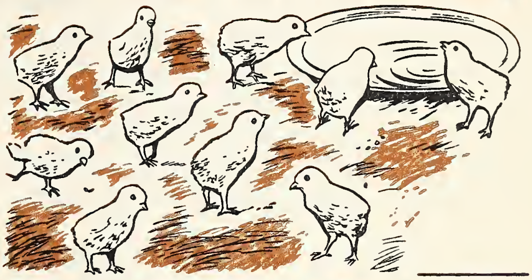
After she has made the individual tabulations, the teacher should compile a group tabulation to determine which, if any, of the numbers from *1* to *10* should have further attention from the class as a whole. When this diagnosis is made, the teacher will be ready to plan the next steps to take in meeting the needs of all of the children.

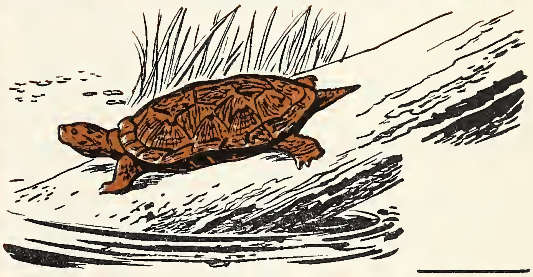
If the children are to succeed in arithmetic and develop sureness in working and thinking with numbers, they must build sound foundations as they go along, step by step. Those children who have not a thorough understanding of counting and the number symbols to *10* will need to retrace learning steps before they go on to the more difficult steps which are to follow. Those children who have developed the desired understandings and skills should be given other things to do which challenge and interest them, instead of being asked to repeat work which they understand.

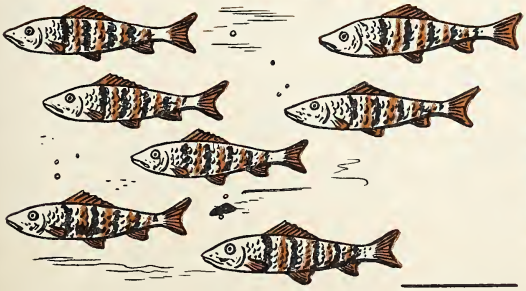
Additional learning helps. The teacher probably will need to work individually with the children who had difficulty. If their difficulty is lack of sureness in counting, the learning steps for rational counting may be retraced. If it is lack of knowledge of number meanings—not knowing how many a given number represents—experiences in using concrete objects may be provided again. To bring about the desired growth, the children may build groups to show what various numbers mean. They may also build groups and count to find how many there are in each group, writing the number that tells how many they counted. They may also draw pictures containing from 1 to 10 objects each, exchange drawings, count the objects, and write the numbers.

If some of the children cannot make some of the number symbols, the steps used in introducing those numbers may be retraced —tracing large models on the blackboard, writing in the air, and writing the symbols independently.

Enrichment activities. The children who do not need help may play matching games with the number cards, make bundles of 10 counting sticks for later use, or play store or bank with the toy money.







MAKING SURE OF NUMBER MEANINGS

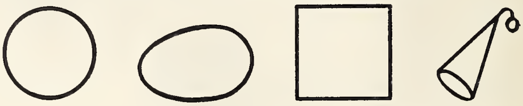
Preparatory Activities

The fifth "Making Sure" test is provided on page 41 of the pupil's book. It tests ability to recognize the number symbols and to show what they mean.

Again, this is a test which is meant to enable the teacher to diagnose difficulties, so no preparation for it is necessary. The children may be told that they will have an opportunity to read the numbers and show how many each number means.

Using Page 41

The teacher may explain to the children that in this exercise the numbers at the left tell them how many things to draw in each row. Since so many pictures must be drawn, the children may be told to draw simple things such as balls, boxes, or eggs. The teacher may draw models on the blackboard to demonstrate what is meant.



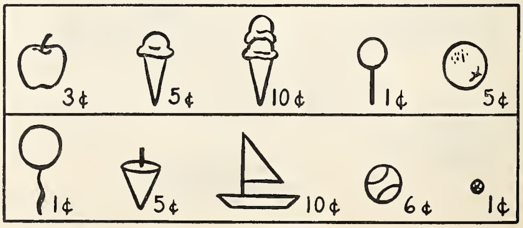
Follow-up Activities

As the teacher evaluates each child's work, she will be concerned not only with the mistakes in the number of objects drawn, but with the reasons why the mistakes were made. She will wish to try to find whether the child counted incorrectly as he drew, or whether he was uncertain what number the symbol called for. His responses on the preceding test will help to some extent in making the diagnosis. For example, if the child knew the symbol *8* on page 40 and missed it on page 41, the chances are that he made a mistake in counting. The teacher will be able to find why mistakes were made as the child does the work again orally.

Children, like adults, frequently make mistakes because of carelessness, or for some other reason that has no relation to the degree of their skill and depth of understanding. If the child has a chance to look his work over, he may be able to correct his own mistakes. In any event, the attempt certainly will reveal to the teacher important facts about his work habits, and suggest the things he needs to do to improve.

Additional learning helps. Children who had difficulty recognizing the number symbols may be given an exercise with concrete objects. For example, the teacher may have them make groups as she says the numbers. If the child places 3 objects on the desk when she says three, he may be helped to find the symbol that represents *three.* Then the procedure may be reversed. The teacher may hold up a card with a number on it—5, for example. The child may say what the number is and place blocks on the desk to show what it means. Practice of this type may be followed by playing a matching game with number cards, one set of which contains the symbols, and the other the pictures to show what the numbers mean. The teacher should observe to see whether the child can match the cards successfully, and whether he can say the number on one card before he counts the pictures on the other.

Enrichment activities. The children who do not need help at this time may be interested in making a toy shelf for their play store. Pictures of things that cost 1 cent, 5 cents, 10 cents, etc., may be drawn or cut from magazines and pasted in rows on long strips of wrapping paper with lines for shelves drawn on it. For example:



1	
7	
4	
8	
2	
6	
10	
9	
3	
5	

UNDERSTANDING THE MEANING OF NUMBERS AND THE NUMBER SEQUENCE TO 20

Arithmetic holds greater interest for children and they are able to use it more effectively if numbers have meaning for them. Numbers take on meaning for young children very gradually. Therefore, children should be given opportunities, over a long period of time, to work with numbers in the many and various ways which help to reveal meanings and relationships. Each new type of experience carries the children farther along the road toward learning which is meaningful and therefore permanent.

Learning Number Sequence to Ten

This section of the pupil's book will enable the children to learn more fully the meaning of the numbers *1* to *10*. They have had many experiences which have developed understanding of the fact that each of the numbers represents a quantity — one or a group of things. They will learn next how to write the numbers in sequence, and will see the quantitative meaning of the numbers in sequence. That is, they will demonstrate graphically that each of the numbers, in sequence, represents one more than the preceding number and one fewer than the next number. These experiences will help them understand more fully both number sequence and number meanings.

Working with Groups

After the children have learned the number sequence, the next step in learning to understand the meaning of numbers is to discover that a number may represent not only a single group, 6, for example, but also a group which is made up of two smaller groups, or 1 and a smaller group. The *6* may represent a group which is made up of a group of 4 and a group of 2, or 1 and a group of 5, or a group of 3 and a group of 3.

The experiences with groups which are provided in this section of the pupil's book are planned to enrich and extend the child's understanding of the numbers to *10* and also to prepare him for the introduction of addition, which will be made in the next section of the book. The experiences with groups of 2 to 6 parallel all of the addition facts which will be introduced in Grade One.

As a part of the experiences with groups, the term *group* will be introduced and defined. The concepts of *larger* and *smaller groups* and groups that are the *same size* will be developed. These terms will be made a part of the child's oral vocabulary of arithmetic.

The plan to be followed in working with groups will be very similar to that suggested for introducing the numbers. Realistic experiences and concrete objects will be used. Then the pupil's book will provide semiconcrete (pictured) materials. Thus, the child discovers the groups in realistic arrangements and situations. Then he builds the groups with small concrete objects and sees the way in which the small groups together make the larger group. Then the exercises in the book enable him to find the small groups and the larger group to which they belong in pictured materials. As the teacher introduces and carries out the work with groups, she will find it helpful to have a number of small toys on hand, such as balls, tops, cars, airplanes, and dolls. These may be collected, or the children may bring them in.

Counting to Twenty; Reading, Writing and Understanding Numbers to 20

As soon as the children have developed an adequate understanding of the numbers *1* to *10*, they are ready to learn about the numbers from *11* to *20*. Experiences for that purpose will be provided in this section of the pupil's book.

Although the term *place value* is not used with first-grade children, the foundation will be laid for understanding the concept. Since the idea of tens is the whole basis of our number system, the children must be able to think of two-place numbers as made up of tens and ones. The figure on the left must eventually represent to them so many tens and the figure on the right must mean so many ones. As two-place numbers are introduced in Grade One, the tens idea will be shown, although it will not be fully developed at this level.

At the time the children are ready to learn carrying in addition and borrowing in subtraction, in Grade Three, these concepts must be thoroughly understood. Only in this way can these processes be learned with an understanding of how and why we carry and borrow. The foundations laid in the work of Grades One and Two are essential readiness for the complete understanding needed later.

The materials in the pupil's book are all planned to illustrate and demonstrate the tens and ones idea each time the meaning of two-place numbers is treated. The teaching suggestions which are included in the Teacher's Edition explain procedures that may be used in preparing for the exercises in the pupil's book. If these suggestions are followed, there will be need for an abundance of concrete objects which can be made into bundles of 10 and held together with rubber bands. Such things as counting sticks, toothpicks, 2-inch pegs, milk straws cut to 2-inch lengths, or strips of cardboard may be used. Each child should have a supply of such counting objects at his desk, and the teacher should have a box of them at her disposal. The children will be able to collect their own materials, or cut the strips of cardboard at school.

The teacher will need to have available 1-inch squared paper for the children to use. If manufactured squared paper is not provided as part of the school supplies, it is possible for the teacher to mimeograph or hectograph the 1-inch squared paper, using newsprint, mimeograph paper, or art paper. If the 8½″ x 11″ or the 9″ x 12″ size is used, the squares should be about ¾-inch, rather than 1-inch, so that there can be 10 squares in each row and 10 rows of squares on a sheet of paper.

This section of the pupil's book provides exercises to develop the following skills and understandings:

reading and understanding the meaning of the numbers to 20

rational counting to 20

writing numbers in sequence to 20

discovering the meaning of two-place numbers and understanding each number as ten and so many more

counting by fives and tens to 20

Also included in this section of the pupil's book are materials to help develop an understanding of the ordinal *first* and the terms *next* and *last*.

There will be further development of understanding of money also. The tens idea will be applied to dimes, and the relationships among the penny, nickel, and dime will be developed further.

Several new terms will be introduced in this section. These include *larger* and *smaller, larger* and *smaller groups,* and *above* and *below.* All of these terms will be used orally, and will not be introduced as reading vocabulary at this grade level.

The sixth "Making Sure" test is provided also. It tests numbers and the number sequence to 20.

Learning a Reading Vocabulary for Arithmetic

One of the responsibilities of the teacher is to help the children learn to read not only the terms, the questions, and the names that are necessary to an understanding of arithmetic, but also to read and understand the directions and other content peculiar to arithmetic. In *Making Sure of Arithmetic, Book One,* the reading load is held to a minimum. (See the Teacher's Edition page 9.) In this section of the pupil's book, reading of directions is introduced. Only one direction is used: "Tell how many." It will be used frequently from the time of its introduction to the end of the book.

UNDERSTANDING NUMBERS IN SEQUENCE

Preparatory Activities

Although the children have used the numbers in sequence to 10 in counting, they have not read the symbols in sequence. On page 42 of the pupil's book, provision is made for this experience, and also for having the children show what each number means.

Building a number chart. An excellent way to help the children visualize the number sequence and see the quantitative relationship of one number to another is to build a number chart.

A large piece of manila tag, wrapping paper, or newsprint may be lined in 1½″ squares with 11 squares in each row and 10 squares in each column. Stars, apples, tops, balls, circles, or other small objects may be cut from colored paper to paste on the chart. Gummed seals may be used if the teacher prefers.

Write the words *Our Numbers* at the top of the chart. Then write *1* in the square at the upper left corner. Let a child paste one star next to the *1* in the first vacant square, to show that the number means one thing. Each child at his desk may write *1* on a card, place it on the desk, and put beside it one of his counting objects.

Then write *2* in the square immediately below the *1*, and let a child paste stars in the two vacant squares next to the *2*. Each child at his desk may write *2* on a card and place objects to show what it means.

The numbers *3* to *10* may be put on the chart and illustrated at the desks, using counting objects, in the same way. The children may read the numbers on the chart. Then the chart may be posted in the room for further use.

Our Numbers

1	◉									
2	◉	◉								
3	◉	◉	◉							
4	◉	◉	◉	◉						
5	◉	◉	◉	◉	◉					
6	◉	◉	◉	◉	◉	◉				
7	◉	◉	◉	◉	◉	◉	◉			
8	◉	◉	◉	◉	◉	◉	◉	◉		
9	◉	◉	◉	◉	◉	◉	◉	◉	◉	
10	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉

Using Page 42

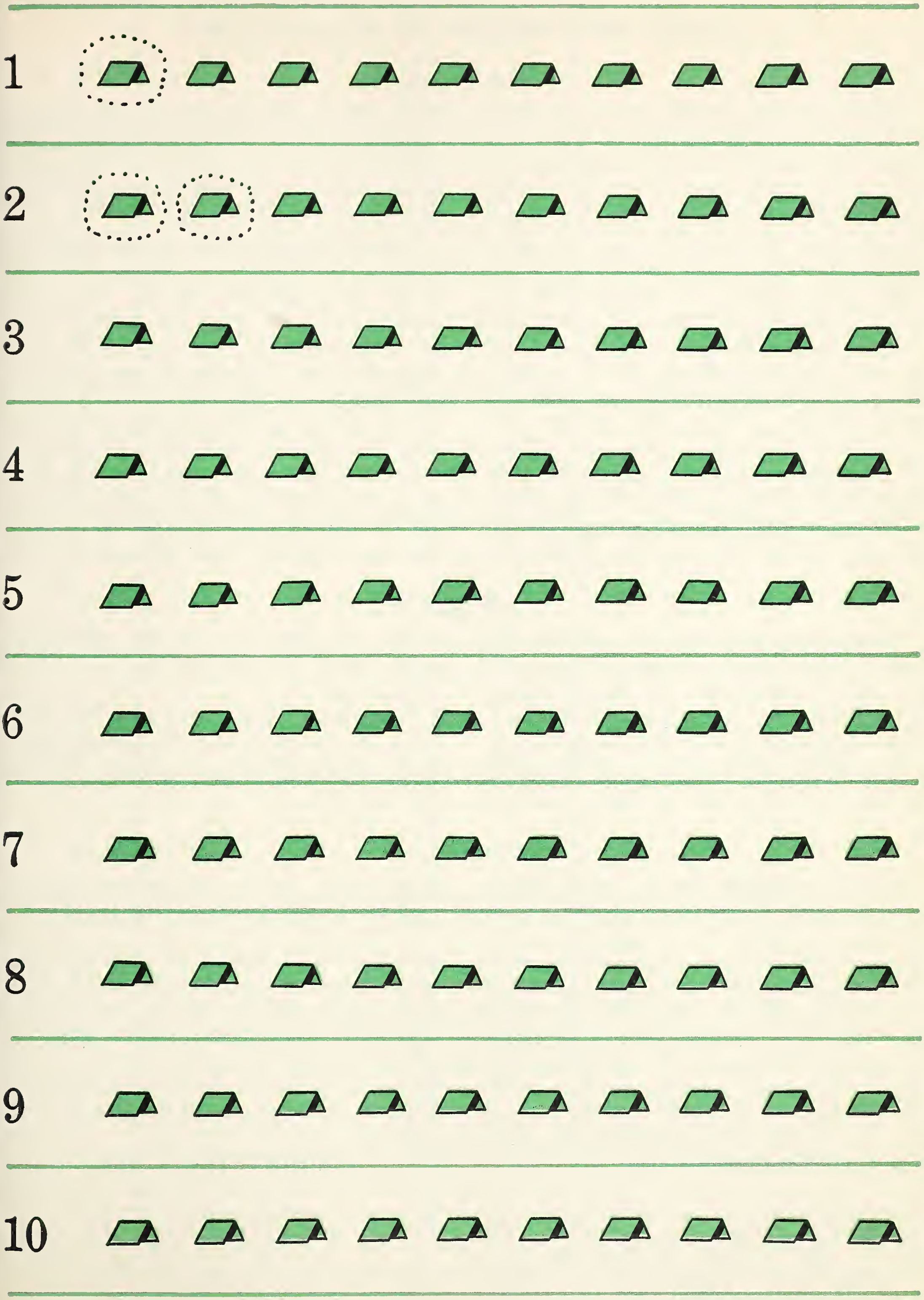
Have the children find, by counting, that there are 10 pup tents in the first row. Develop the fact that there are 10 in each row. Then point out the fact that 1 tent is circled in row one to show what the number *1* means. Have the children trace the ring around the one tent. Help them see that 2 tents have rings around them to show what the 2 means. They may trace the rings around the two tents. Then have them make rings around tents in each row to show what the number in that row means.

Follow-up Activities

Additional learning helps. If some of the slower learners had difficulty with the exercise in their books, the teacher may help them build a chart of their own similar to the large classroom chart previously described. One-inch square-ruled paper should be supplied for this purpose.

After they have made this chart, let the children arrange their number cards in sequence on their desks. Each child may build his own chart with his counting objects. The teacher will watch for mistakes and for evidences of lack of understanding.

Enrichment activities. The faster learners may be interested in making number charts for their arithmetic folders or scrapbooks. Square-ruled paper should be provided for this purpose.


1
2
3
4
5
6
7
8
9
10

WRITING THE NUMBERS *1* TO *10* IN SEQUENCE

Preparatory Activities

Since each number from *1* to *10* has been introduced and its meaning developed, and since the children have had experience in writing the numbers in miscellaneous order, they are ready to learn to write them in sequence. Page 43 of the pupil's book provides for such a learning step. It will be accomplished more easily and meaningfully because of the experience provided on page 42.

Using the blackboard. Before the children do the exercise in their books, the teacher will wish to make sure that each child can write the numbers in sequence and that he can write them legibly. Several children may write the numbers at the blackboard, putting them in a line (column) from *1* to *10*. The teacher will make note of any children who need help. Then another group may have a turn. After all of the children have written the numbers, those who had no difficulty may write them in columns on paper at their desks while the teacher works with those who need help.

The numbers should be written in columns because the children are taking their first steps in learning about our number system as a system of tens. When the numbers to *20* are introduced, they will make the second column of ten. Gradually adding columns of ten helps the children to see the relationships between the first decade and the second, the second and the third, etc. They also begin to sense the tens idea, which is basic to an understanding of our number system. For this reason, the children should write the numbers in columns of ten from the very first.

Using Page 43

The children may trace the models in the first "line," or column, of boxes. Then they may write the numbers in the next column of boxes, then in the next, and so on. The purpose of the page is to develop an understanding of number sequence as well as to provide practice in writing the numbers. For this reason the children should write down the page, column by column—and not across, row by row.

Next, the children may write in the brown boxes the numbers that are missing. First they will write the even numbers, then the odd numbers.

Follow-up Activities

Additional learning helps. It is not likely that any of the children had difficulty in writing the numbers *1* to *10*, unless there are children in the group who are very immature and lack muscular coordination. If that is the case, it will be of little use to push them. This type of growth comes about very gradually as a part of the process of general physical growth. Coordination of the smaller muscles follows the development of the larger muscles, so refining a child's writing must sometimes wait for greater general physical maturity.

However, some practice at the blackboard and at the desk with unlined paper and a large pencil or a crayon may lead to improvement even for the most immature. These children should be encouraged to use large free movements and make large figures.

The teacher will be alert to the need to encourage these children and help them feel secure in spite of their difficulty with writing. They may be told that, as they grow up a bit more, they will be able to write better. A sense of failure because they cannot write may cause first-grade children to fail to learn many more important things, in other subjects as well as in arithmetic.

Enrichment activities. The children who do not need help at this time may find other things to do. Perhaps they will wish to play store or bank and use the make-believe money again. Some of them may be interested in the games on the arithmetic table.

1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

1	
	2
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	8
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	10

UNDERSTANDING PENNIES, NICKELS, AND DIMES

Preparatory Activities

The children have developed some understanding of the relationship between pennies and nickels and pennies and dimes. They are now ready to learn about the relationship between nickels and dimes. Page 44 of the pupil's book provides for this learning step and reviews previous understandings.

Using realistic experiences. It may be that the children have had recent experiences in buying things that cost a nickel or a dime. They may be asked to tell what things they bought, and what coins they used to pay for them. For example, Tim may have bought a pencil for 5 cents. Perhaps he paid for it with 5 pennies. Sue may have paid a nickel for a 5-cent pencil. It may be that Alan bought a 10-cent car. He may have paid for it with 10 pennies, 2 nickels, or a dime.

After a discussion of such situations, real coins can be used to develop the desired understandings. For example:

Place on the table 5 pennies and 1 nickel.
Place near them 10 pennies and 2 nickels.
Place near these 10 pennies and 1 dime.
Place near these 2 nickels and 1 dime.

Use one 5-cent pencil to show that either the 5 pennies or the nickel may be used to pay for the pencil.

Then place two 5-cent pencils on the table and develop the understanding that:

2 nickels or 10 pennies will buy 2 pencils
1 dime or 10 pennies will buy 2 pencils
1 dime or 2 nickels will buy 2 pencils
2 nickels are as much money as 1 dime
5 pennies can be exchanged for 1 nickel or 1 nickel for 5 pennies; 10 pennies for 1 dime or 1 dime for 10 pennies; 2 nickels for 1 dime or 1 dime for 2 nickels

Using Page 44

Call attention to the dime. Explain that the dime will buy as much as the pennies. The dime is as much money as the pennies. Have the children find how many pennies there are and write the number.

Explain that the 2 nickels will buy as much as the pennies in the next picture. The 2 nickels are as much money as the pennies. Have the children find how many pennies there are and write the number.

Explain that the dime will buy as much as the nickels in the next picture, and is as much money. Have them find how many nickels there are and write the number.

Explain that 1 nickel will buy 1 top. Have the children write the number that tells how many tops 2 nickels will buy.

Call attention to the dime. Have the children draw pictures of tops to show how many 5-cent tops a dime will buy. Then have them write the number that tells how many 5-cent tops a dime will buy.

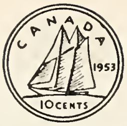
Follow-up Activities

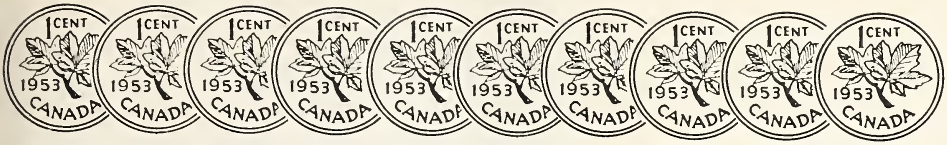
Additional learning helps. If some of the children need more experiences, the teacher may have them use real coins or toy money to play store and bank. First, have them show how many pennies they can get for a nickel, how many pennies for 2 nickels, how many pennies for a dime, and how many nickels for a dime.

Then give them 5 pennies and ask how many nickels they can get for them. Give them 10 pennies and ask how many nickels they can get for them. Give them 10 more pennies and ask how many dimes they can get for them. Give them 2 nickels and ask how many pennies they can get for them.

Let the children pretend to buy and pay for two 5-cent toys with pennies, then with nickels, then with dimes.

Enrichment activities. The other children may make pictures for their scrapbooks to show that 1 nickel is as much money as 5 pennies; 2 nickels are as much money as 10 pennies; 1 dime is as much money as 10 pennies; and 1 dime is as much money as 2 nickels.


CANADA
1953
10 CENTS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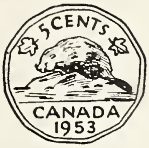
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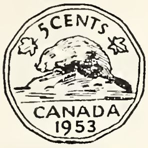
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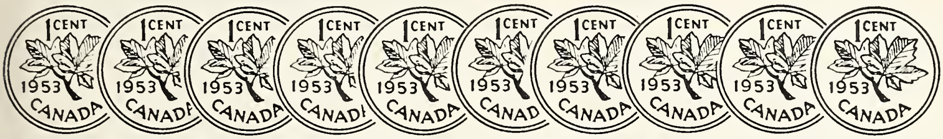
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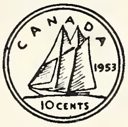
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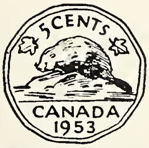
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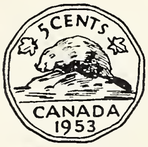
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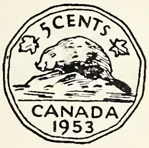
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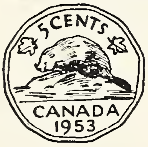
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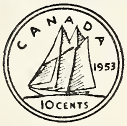

CANADA
1953
10 CENTS

TERMS OF COMPARISON: *LARGER* AND *SMALLER*

Preparatory Activities

The terms of comparison, *larger* and *smaller,* will be needed when the work with groups is introduced. The material for introducing these terms is provided on page 45 of the pupil's book.

Using realistic experiences. The terms *larger* and *smaller* can best be introduced and their meaning made clear through the use of realistic experiences. For example, the classroom number chart is larger than those made by the children. The teacher's desk is larger than a child's desk, etc.

When the terms have been introduced and several examples have been used, the children may take turns pointing out larger and smaller things in the classroom, for example: the teacher's chair and a chair in the reading circle; the flowerpot in the window and the one on the table; the music book and the reader; the softball and the kickball; John's pencil and Bill's pencil.

Then the children may compare two pictures of things drawn on the blackboard, such as two trees, two houses, two animals, two flowers.

Following these experiences, one child may draw a picture on the blackboard, and another child may draw a larger picture. Then one child may draw a doll, and another child may draw a smaller doll. Finally, a child may draw a barn. Another child may draw a larger barn at the left, and still another child may draw a smaller barn at the right. These experiences may be continued until the teacher is sure the terms are understood.

Using Page 45

The first exercise may be used to make sure the children understand the terms *larger* and *smaller.* Through discussion, help the children see that the larger package is green and the smaller package is white. Have them color the smaller package red.

Call attention to the drums in the next exercise. Have the children color the larger drum green and the smaller drum red.

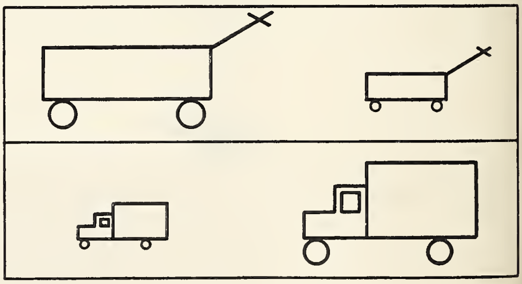
Finally, call attention to the kite in the space at the bottom of the page. Tell the children to draw a larger kite at the left and color it green. Then have them draw a smaller kite at the right and color it red.

Follow-up Activities

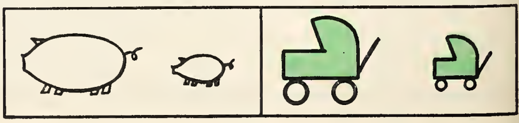
Additional learning helps. If some of the children need more help in understanding *larger* and *smaller,* they may be given experiences similar to those suggested as preparatory activities. For example, they may find the larger and smaller of two books, two pencils, two pictures, etc.

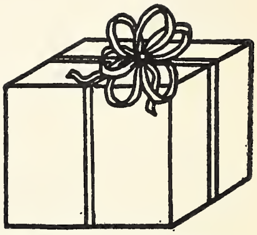
Then they may make on the blackboard pictures of a boat and a larger boat, a tree and a smaller tree, a house and a larger house, etc.

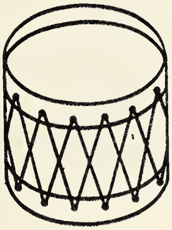
So that the teacher will be able to have a response from every child, an exercise similar to that in their book may be hectographed or mimeographed. The children may be told to color the larger thing in each picture green, and the smaller, red.

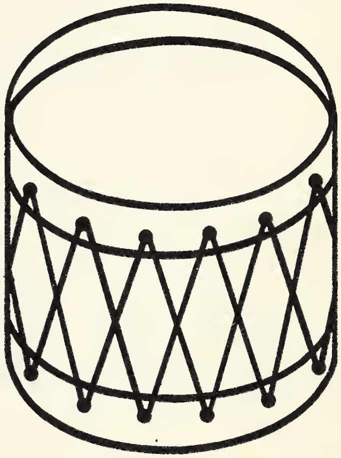


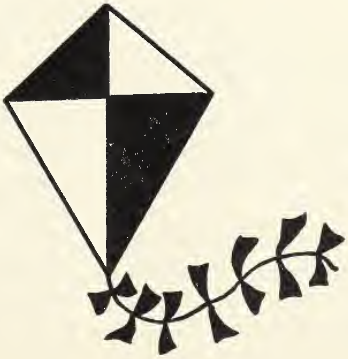
Enrichment activities. The other children may wish to draw pictures that show larger and smaller toys or animals, as:











LEARNING WHAT A GROUP IS

Preparatory Activities

The children will need to understand that a group is two or more things that are together, and that one thing is not a group. Page 46 of the pupil's book provides material to help develop these understandings.

Utilizing classroom activities. The word *group* is known to the children from their out-of-school and classroom experiences. They play in groups. They probably read in groups. Since the term is used most often to refer to children who are together for some reason, the teacher will be able to capitalize upon this in pointing up and clarifying the meaning of the word for the purposes of arithmetic. For example, the teacher may refer to a group—perhaps "Mary's group" or the "group at the blackboard." Then she may ask what we mean by a group. If the children cannot explain, the teacher may tell them. The definition of the term may be developed in a way similar to this:

Point out several children who are working together—perhaps 8 or 10. Ask if this is a group. Then point out a smaller group—perhaps 6 or 7 children—and repeat the question. Gradually decrease the size of the group until the question is asked about 2 children.

The other concept, that one is not a group, may be developed immediately by pointing out one child and saying that one alone is not a group.

Several groups of children may be arranged in various places in the room. Then one child may sit alone at a table, another may work alone at the blackboard, etc. The children may identify the groups and point out each child who is not part of a group.

Books, toys, plants, pencils, etc., may be arranged on a table. Some may be in groups and others may be single objects. The children may be told that we sometimes think of toys, pencils, books, etc., as groups when there are two or more of them together. Have them identify each group, and each thing that is not in a group.

Using Page 46

Help the children identify the polar bears, penguins, and walruses. Then have the children find the group of bears and draw a ring around the group. Tell them to find the other groups of animals on the page and draw a ring around each group. Have them draw a group of animals in the box at the bottom of the page. Simple line drawings, such as these, or circles, dots, or X's may be used.

Follow-up Activities

Additional learning helps. If some children could not identify the groups of animals in their books, experiences with realistic situations may be continued. Then the children may build groups with their concrete objects.

When all children understand what is meant by a group, they may be given a stack of the pictures from magazines that are on the arithmetic table. They may put in one pile those pictures that show groups and in another pile those that show only one thing. The children may then be asked to draw a group of toys, animals, or children. They may also be asked to make a picture that does not show a group.

Enrichment activities. The children who do not need help at this time may find pictures of groups of things in magazines. These pictures may be cut out for use on the arithmetic table where they may be examined by the slower learners. If the children wish, they may make a picture of a group of things for their folders or scrapbooks.

LEARNING TO IDENTIFY LARGER AND SMALLER GROUPS

Preparatory Activities

The next learning step for the children is to identify larger and smaller groups. Page 47 of the pupil's book provides an exercise which was planned for this purpose.

Using realistic experiences. As the children identify the larger and the smaller of two groups, the number in the groups may be recognized but need not be emphasized. Groups of from 2 to 5 or 6 may be compared.

Since the word *group* applies best to children, groups of 2 children and 5 children may be arranged in the front of the room. The groups may be doing different things, such as reading, drawing at the blackboard, standing at a window, or sitting at a table. Have the larger and the smaller groups identified. Then arrange a group of 3 and a group of 6 children, and have the larger and the smaller groups identified. Then let the children compare groups of 2 and 4, and 3 and 5 children.

Arrange on a table 2 stacks of books, with 2 books in one stack and 5 in the other. Have them compared to find which is the larger and which is the smaller group. Then let the children compare groups of 4 toys and 6 toys; 3 rulers and 2 rulers; 2 chairs and 6 chairs; etc.

A picture of 3 apples may be drawn on the blackboard. Have a child draw a larger group of apples. Then a picture of 5 eggs may be drawn, and a child may draw a smaller group of eggs.

Using Page 47

Let the children discover that all the pictures on this page are about gardens or gardening.

Have the children study the two pictures of girls in a garden. Then ask them to draw a green ring around the larger group and a brown ring around the smaller group.

Call attention to the two groups of garden forks. Have the children draw a green ring around the larger group and a brown ring around the smaller group.

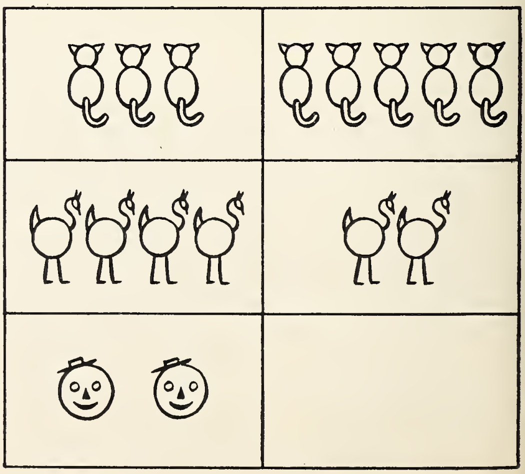
Proceed in the same way with the watering cans. Then have the children draw a smaller group of flowers in the empty vase.

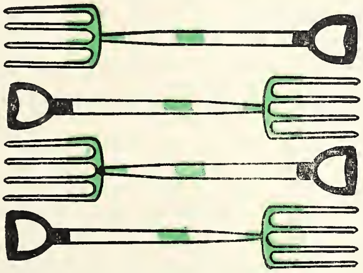
Follow-up Activities

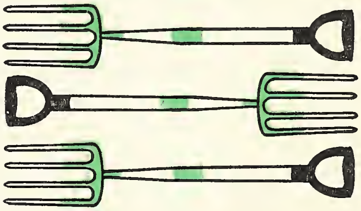
Additional learning helps. Any children who had difficulty may have additional experiences similar to those suggested as preparatory activities.

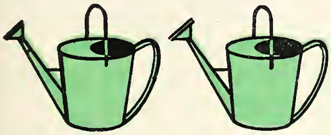
Then two groups of small counting objects may be placed on their desks, and the children asked to find the larger and the smaller of the groups. After they compare several groups of counters, let them make groups of counters larger than a group of 3 and smaller than a group of 6.

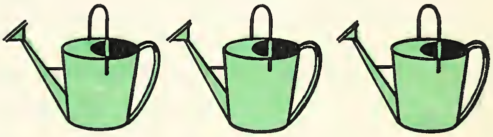
An exercise such as the following may be mimeographed or hectographed. The children may carry out the first two exercises by circling the larger groups of cats and chickens in green and the smaller groups in brown. In the last exercise, have the children count the jack o'lanterns at the left. Have them draw a larger group of jack o'lanterns in the empty box.

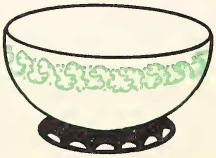












LEARNING TO IDENTIFY THE LARGEST AND SMALLEST GROUPS

Preparatory Activities

The children are now ready to learn to identify the largest and smallest of three groups. At this time the comparison will be made by counting the number of things in the groups, rather than by merely observing that one group has more things in it than another. Page 48 of the pupil's book provides exercises to be used for this purpose.

Comparing groups of children. Have a group of 8 children and a group of 6 children come to the front of the room. Ask the other children to tell which is the larger and which is the smaller group. Then ask them to count the children in each group. Ask if a group of 8 children is larger than a group of 6 children, and if a group of 6 children is smaller than a group of 8 children.

Now have a group of 4 children stand near the groups of 8 and 6. Have the children tell how many are in each group. Ask if a group of 4 children is smaller than a group of 8 children, and if a group of 4 children is smaller than a group of 6 children. Then ask if a group of 8 children is larger than a group of 6 children, and if a group of 8 children is larger than a group of 4 children.

Now ask:

Which is the largest group, a group of 8, a group of 6, or a group of 4? Which is the smallest group, a group of 8, a group of 6, or a group of 4?

Using pictures and concrete objects. Pictures of three groups of toys may be drawn on the blackboard to provide experiences in comparing groups of 3, 5, and 7. The same questions should be asked about the groups of toys as were asked about the groups of children.

Groups of pictures, books, or small objects may be compared in the same way until the teacher is sure the children understand the concepts of largest and smallest groups.

Using Page 48

Help the children identify the stuffed kangaroos, pandas, lambs, and mice. Then have them count the kangaroos in each group and write the number. Have them draw a green ring around the larger group and a brown ring around the smaller group. Follow the same procedure for the pandas.

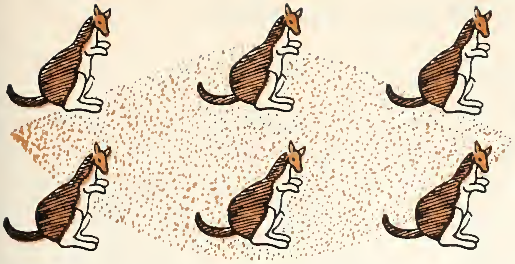
Then have them count the lambs in each group and write the number. Ask them if 6 lambs is a larger group than 2 lambs; if 6 lambs is a larger group than 4 lambs. Then ask them if 2 lambs is a smaller group than 6 lambs; if 2 lambs is a smaller group than 4 lambs. Have them make a green ring around the largest group of lambs and a brown ring around the smallest group of lambs.

Repeat the procedure with the groups at the bottom of the page.

Follow-up Activities

Additional learning helps. If there are any children who seem to require other opportunities to learn the concepts of largest and smallest groups, they may be given additional experiences with groups of children, pictures of groups, and groups of concrete objects. It may help to start with small groups, such as 3, 5, and 6, or 2, 4, and 5. In this way the children can see the largest and smallest groups without thinking of numbers at the same time. When larger groups are used, the children may count the number in each group before they compare the groups and determine which of them is the largest and which is the smallest.

Enrichment activities. The children who do not need help at this time may make a picture for their folders or scrapbooks to show what we mean by largest and smallest groups. They may make a picture of a group, and then make a smaller group at the right and a larger group at the left.



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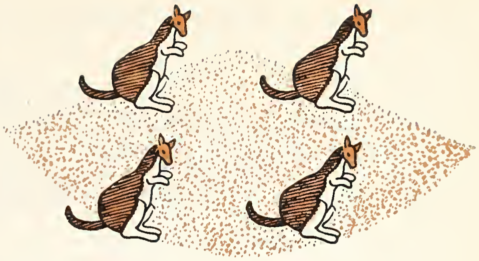

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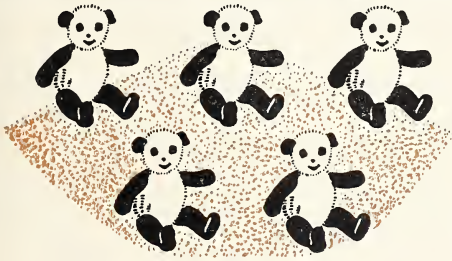

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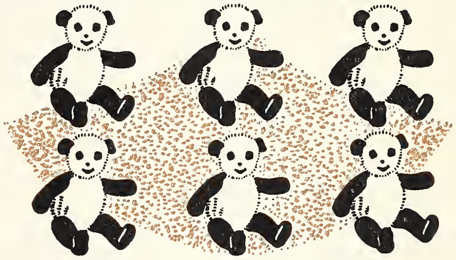

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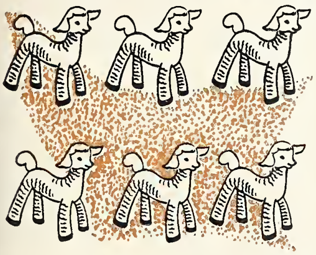

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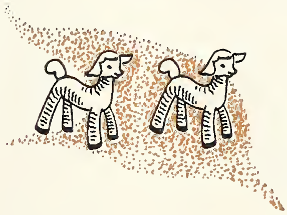

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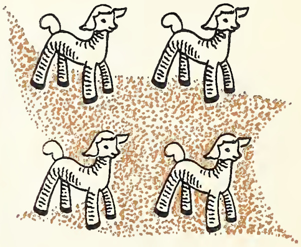

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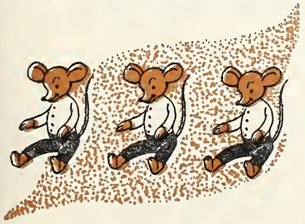

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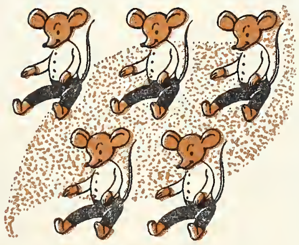

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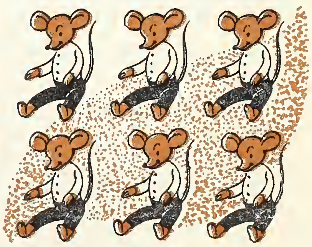

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LEARNING ABOUT GROUPS OF TWO AND THREE

Preparatory Activities

The children are now ready to learn that the group which a number represents may be made up of subgroups. They will discover, for example, that a group of 4 may be made up of subgroups of 2 and 2, 3 and 1, or 1 and 3. Such experiences are essential to understanding the meaning of numbers. They also develop readiness for learning to add. Page 49 of the pupil's book introduces groups of 2 and 3 in various planned arrangements.

Using realistic arrangements. If toys have been provided, 1 doll may be put on a table and 1 on a chair. If not, erasers may be used. The teacher asks:

How many dolls are on the table? How many are on the chair? How many dolls are there?

Then 2 dolls may be put on the table and 1 doll on the chair. The teacher asks:

How many dolls are on the table? How many are on the chair? How many dolls are there?

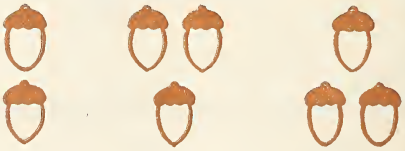
The position of the dolls may be changed so that 1 doll is on the table and 2 dolls are on chairs. The same three questions may be repeated.

Using patterned arrangements. The children may now build the groups with their small counting objects at their desks. They should leave all of the groups on their desks until the exercise is completed. The teacher may say:

Place 1 counter on the desk. Place 1 more counter below it. How many counters are there on the desk now?

Place 2 more counters on the desk. Place 1 more counter below them. How many counters are there in this group?

Place 1 counter on the desk. Place 2 more counters below it. How many counters are there in this group?



Using Page 49

Help the children identify the helicopters and airplanes (Constellations) in the pictures. Then ask:

How many red helicopters are there? How many helicopters are not red? How many helicopters are there in the picture?

Have the children write the number that tells how many there are in the picture.

Focus attention on the picture of airplanes at the left. Then ask:

How many red airplanes are there in this picture? How many airplanes are not red? How many airplanes are in the picture?

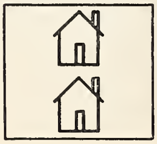
Have the children write the number that tells how many airplanes there are in the picture.

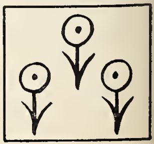
Focus attention on the picture at the right, repeat the questions in the same order, and have the children write the number that tells how many there are in the picture.

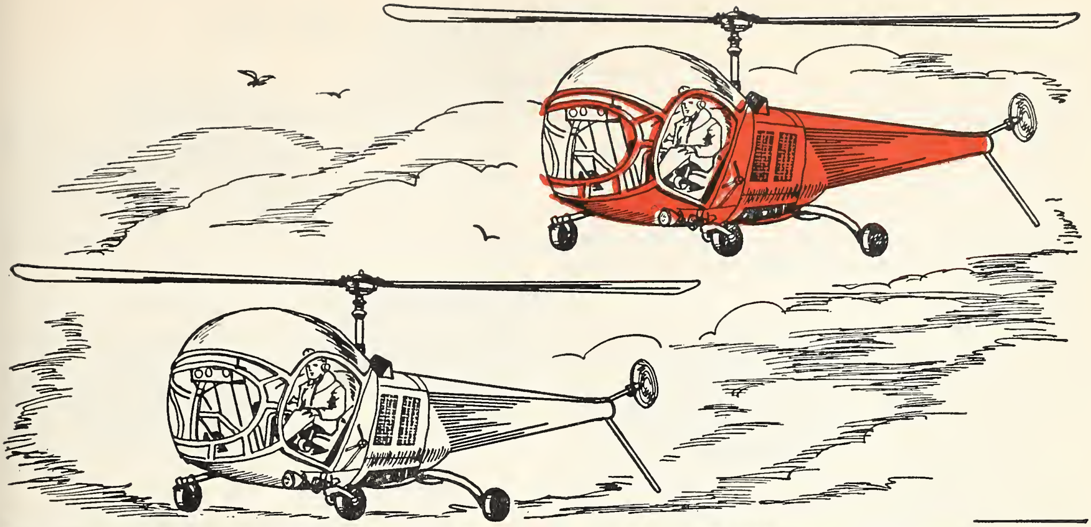
Follow-up Activities

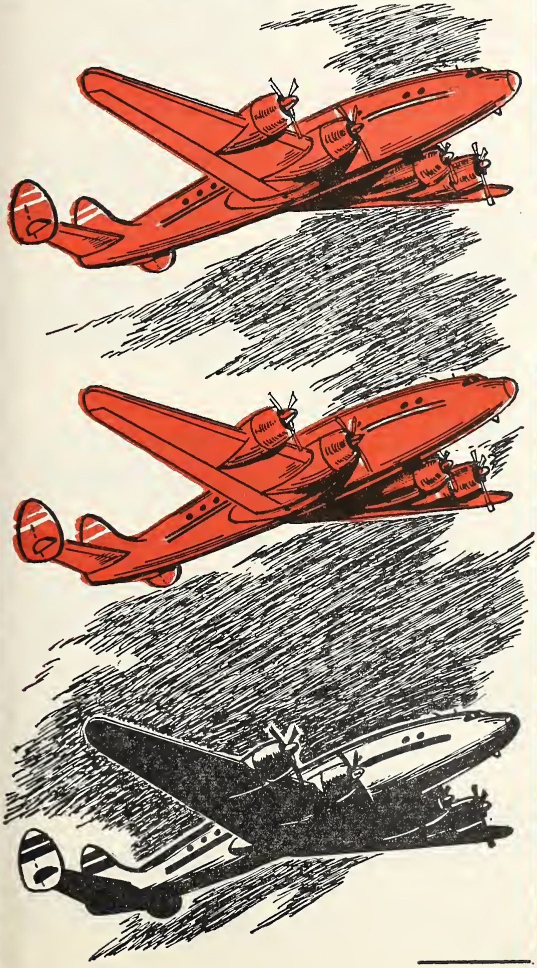
Additional learning helps. If some children need further help, more experiences with large objects may be provided. Then the children may build the groups with their small counting objects. If the teacher prefers, she may help the children make pictures of the groups. The arrangements should be those illustrated under preparatory activities.

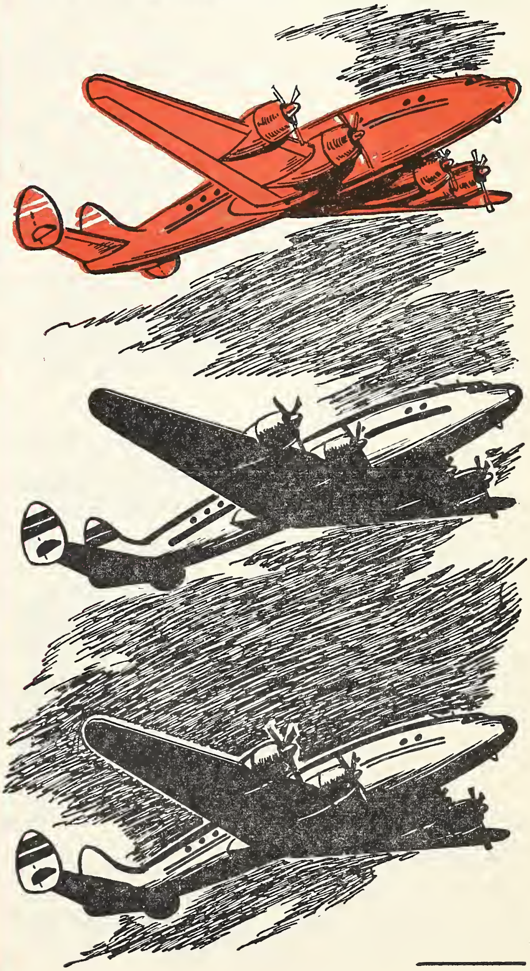
Enrichment activities. The children who do not need help may make cards with pictures showing the various arrangements of groups of 2 and 3.











LEARNING ABOUT GROUPS OF FOUR AND FIVE

Preparatory Activities

The children may now become better acquainted with the numbers *4* and *5* by discovering the subgroups which are associated with them and which parallel the addition facts with sums of 4 and 5. Page 50 of the pupil's book provides material for these experiences.

Using realistic arrangements. Large objects, such as chairs, books, blocks, or toys, may be used in informal arrangements for groups of 4 and 5. Children may be used if the teacher prefers. For example:

Have 2 girls sit at a table and 2 boys stand behind the table. Then ask:

How many girls are at the table? How many boys are at the table? How many children are in the group?

Have 3 children sit at the table and 1 child stand behind it. Then ask:

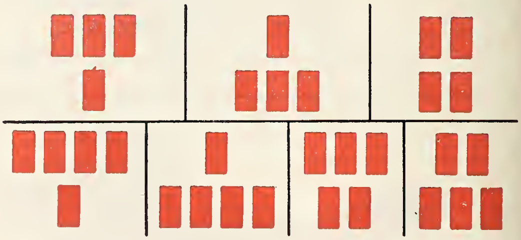
How many children are sitting at the table? How many are standing? How many children are in the group?

Now have 1 child sit and 3 children stand. Then ask the three questions again.

Groups of 5 may be developed in the same way, first with 3 children reading and 2 drawing at the blackboard; then with 2 reading and 3 drawing; then with 4 reading and 1 drawing; and finally with 1 reading and 4 drawing. These three questions should be asked for each new arrangement:

How many children are reading? How many are drawing? How many children are there?

Using patterned arrangements. The children may now build the groups with their counting objects. All of the possible arrangements with two subgroups should be developed. These are:



The teacher may give these directions:

Put 3 counters on your desk. Put 1 more counter below it. How many counters are in this group?

The children count to find the number in the whole group. Repeat the directions to build subgroups of 1 and 3, 2 and 2, 4 and 1, 1 and 4, 3 and 2, and 2 and 3.

Using Page 50

After the children identify the moving vans and the gasoline trucks, the teacher may call attention to the picture at the top of the page. Then ask:

How many blue vans are there in this picture? How many vans are not blue? How many vans are in the picture?

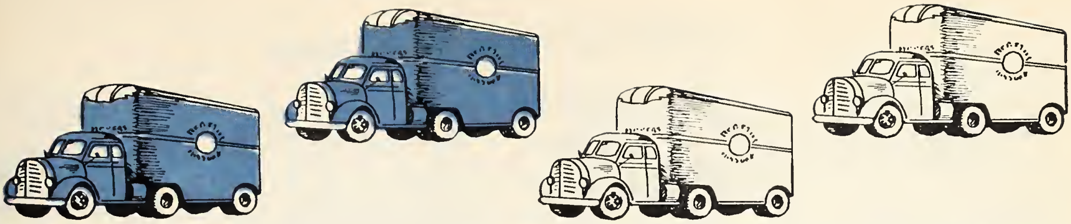
The children are to count to find the answers if they cannot tell by looking at the groups. The first two questions are answered orally. Then the children are to write the number that tells how many there are in the picture. This experience is not to be mistaken for instruction in adding, even though some children may actually add.

Ask the same questions for the other pictures of moving vans and then for the gasoline trucks. It is important to ask the questions in the same sequence, since this insures the proper order of study.

Follow-up Activities

Additional learning helps. If the slower learners need more help, they may draw squares, circles, dots, or triangles to show the various group arrangements.

Enrichment activities. The faster learners may make cards illustrating the various group arrangements, using pictures of their own choice. (See page 114.)



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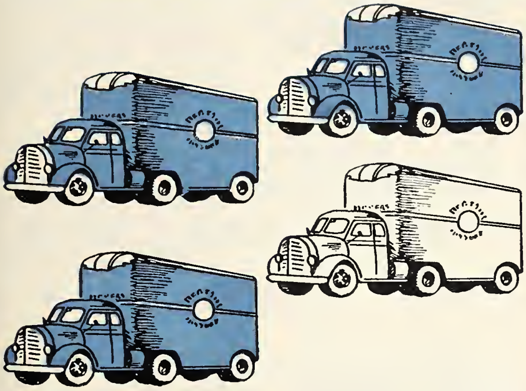

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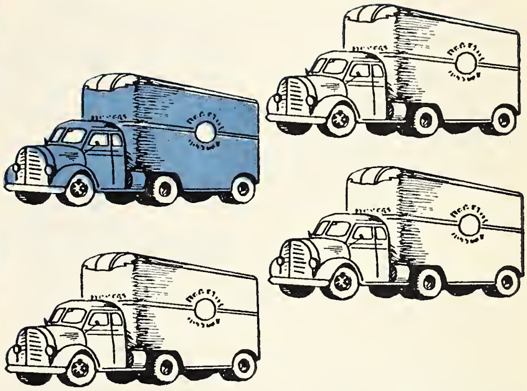

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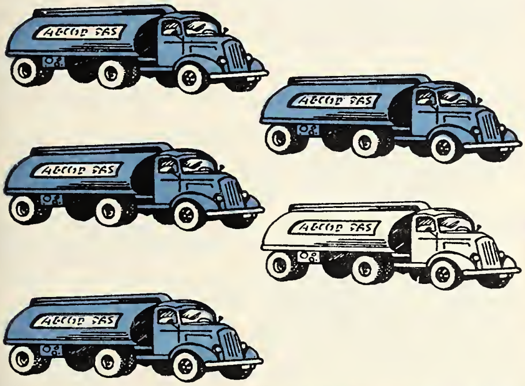

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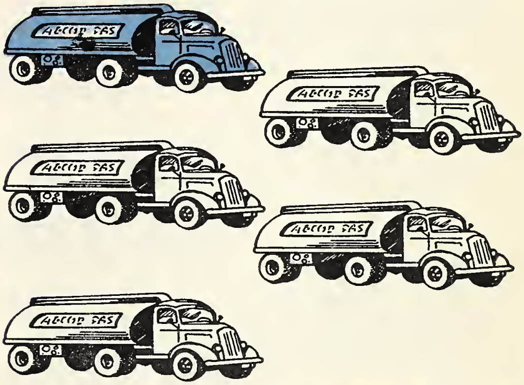

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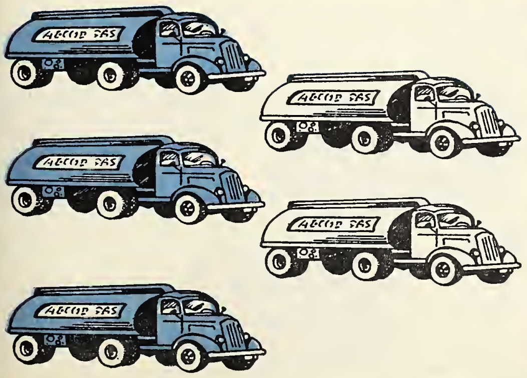

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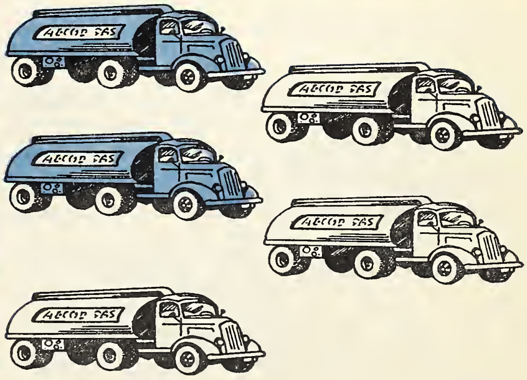

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LEARNING ABOUT GROUPS OF SIX

Preparatory Activities

The children will learn more fully the meaning of the number 6 through the discovery of the subgroups that may make it up. They will also develop a background for understanding addition, since these subgroups parallel the addition facts with sums of 6. Page 51 of the pupil's book provides the material for these experiences.

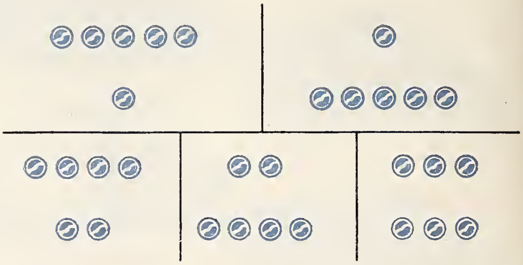
Using realistic arrangements. Toys may be used to help the children discover the subgroups in groups of 6. If toys are not available, chairs, rulers, pencils, or books may be used. For example, the teacher may lay 5 books on the table, and have 1 book standing open on the table. These questions may be asked:

How many books are lying on the table? How many are standing? How many books are on the table?

The subgroups may be changed so that the following arrangements are shown one after the other. The same three questions should be asked about each arrangement.

1 book lying on the table and 5 standing
4 books lying on the table and 2 standing
2 books lying on the table and 4 standing
3 books lying on the table and 3 standing

Using patterned arrangements. The children may discover the subgroups within a group of 6 by using their counting objects. These arrangements should be shown:



The teacher may direct the building of the first arrangement in this way:

Place 5 counters on your desk. Place 1 more counter below them. How many counters are there in this group?

The children count to find the number in the whole group. Then the directions may be repeated to build arrangements of 1 and 5, 4 and 2, 2 and 4, and 3 and 3.

Using Page 51

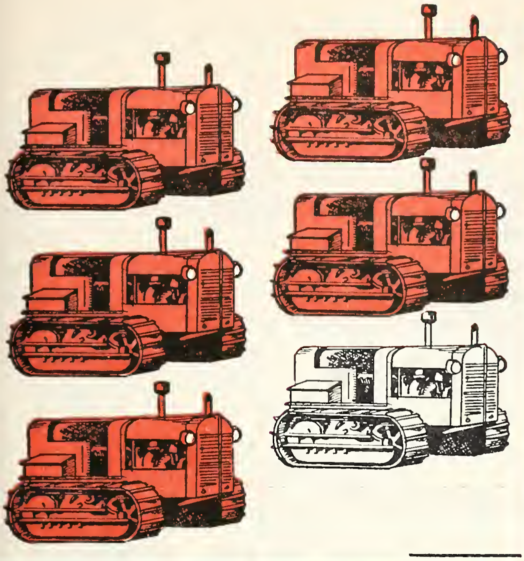
Call attention to the tractors in the picture on the left at the top of the page. Ask how many red tractors there are, how many white tractors, and how many tractors there are in the picture. Have the children write the answer to the last question.

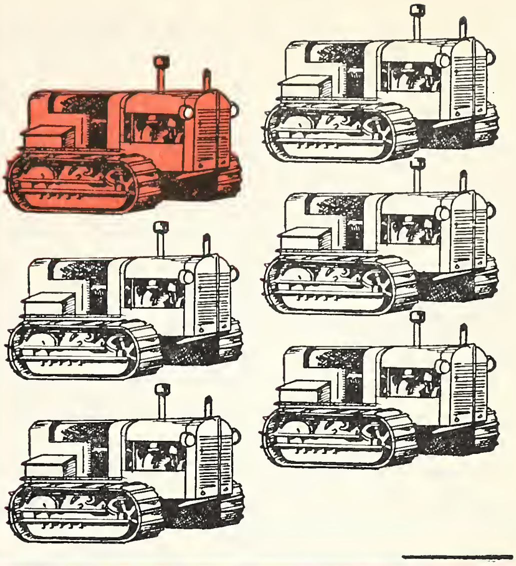
Repeat the questions for each of the other pictures on the page, beginning each time by asking how many red tractors there are. Encourage the children to look over the pictures and make any comments about the arrangements they care to make.

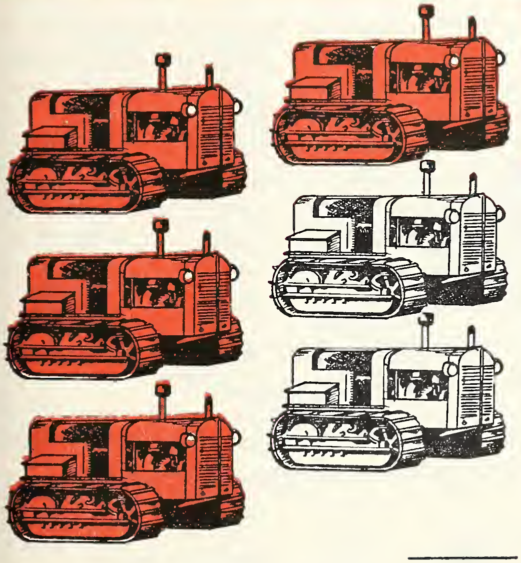
Follow-up Activities

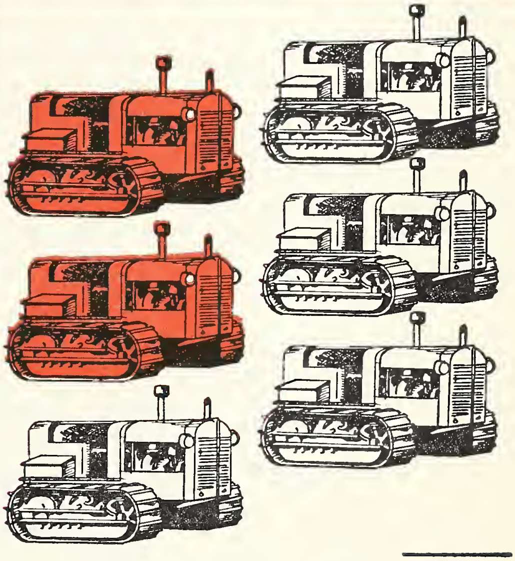
Additional learning helps. If there are any children who need more experience in recognizing groups of 6, large objects or pictures of objects may be used for a directed exercise. For example, the teacher may draw pictures on cards to illustrate the various arrangements of 6. Or, if she prefers, she may let the children cut fruit, flowers, toys, etc., from paper. These cutouts may be thumbtacked on a cork board, a bulletin board, or a piece of heavy cardboard. The pictures may be rearranged from time to time to show each new group arrangement.

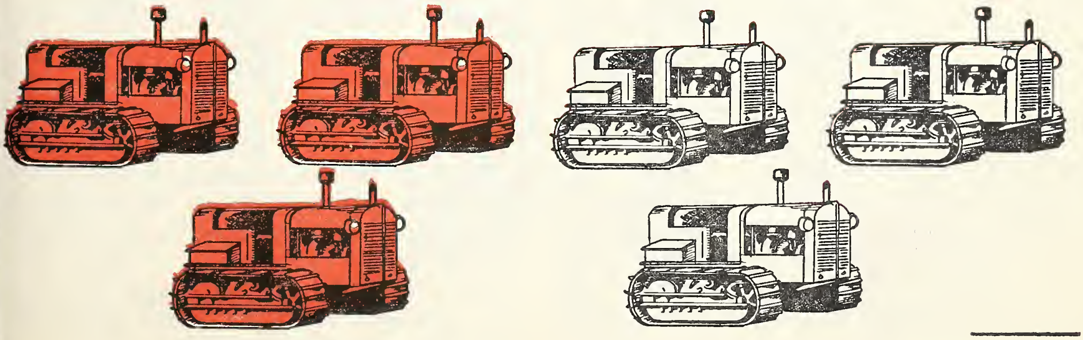
Enrichment activities. The children who do not need help may make illustrated cards showing arrangements of 6. They may also be interested in cutting toys, animals, trees, etc., from folded paper to demonstrate group arrangements. These may be made to stand when unfolded, or cardboard standards may be pasted to their backs.











LEARNING ABOUT GROUPS OF SEVEN

Preparatory Activities

The children's understanding of the meaning of 7 will be enriched at this time through the discovery of the subgroups which may make up 7. Page 52 of the pupil's book provides the material for use in developing this enriched understanding.

Using realistic arrangements. If a set of plastic cowboys and Indians, or soldiers, is available, it may be used to introduce the groups of 7. If not, children may pretend they are cowboys.

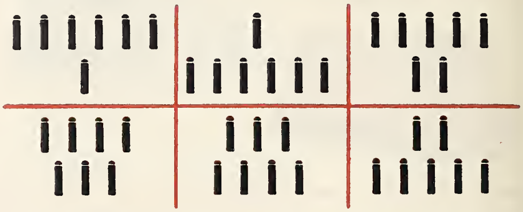
Arrange 6 cowboys around a make-believe campfire. Put 1 cowboy by a make-believe wagon. Ask these questions:

How many cowboys are by the fire? How many are by the wagon? How many cowboys are there?

The subgroups may change so that the following arrangements are shown one after the other. The same three questions should be asked about each arrangement.

1 cowboy by the fire and 6 by the wagon
5 cowboys by the fire and 2 by the wagon
2 cowboys by the fire and 5 by the wagon
4 cowboys by the fire and 3 by the wagon
3 cowboys by the fire and 4 by the wagon

Using patterned arrangements. The children may discover the subgroups in patterned arrangements with their counting objects. When the exercise is completed these arrangements may be seen on each child's desk:



The teacher may give these directions:

Put 6 counters on the desk. Put 1 more counter below them. How many counters are there in this group?

The children count to find the number in the whole group. Then the directions may be repeated to build arrangements of 1 and 6, 5 and 2, 2 and 5, 4 and 3, and 3 and 4.

Using Page 52

Direct attention to the top picture at the left. Then ask these questions:

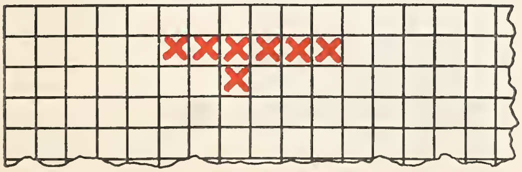
How many dolls have blue dresses? How many dolls have white dresses? How many dolls are there in this picture?

The children count and write the answer to the last question.

Proceed in the same way with each of the other pictures. Care should be taken to ask the questions in the same sequence.

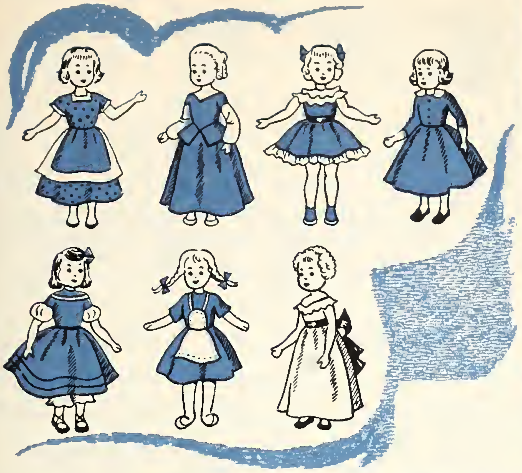
Follow-up Activities

Additional learning helps. If the slower learners seem to need more help, they may discover the subgroups again at their desks, using their counting objects. Then they may make colored circles or X's in the squares of one-inch squared paper to show the various arrangements. For example:



Enrichment activities. The faster learners may choose something else to do at this time. If they have made cards to illustrate the various group arrangements for groups of 2 to 6, they may wish to add cards for the groups of 7. Some of the children may wish to play a matching game with the cards. They may mix the cards and then match all cards that have groups of 4 on them, those that have 5, etc.

These children may also cut more toys, trees, animals, etc., from folded paper for use in demonstrating groups.



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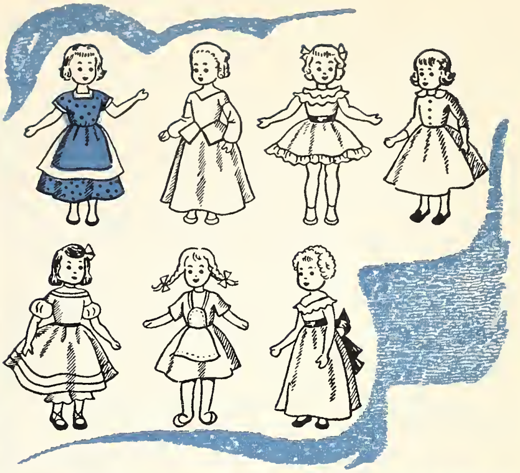

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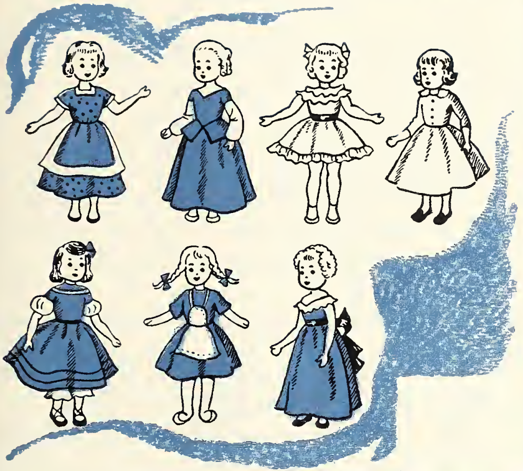

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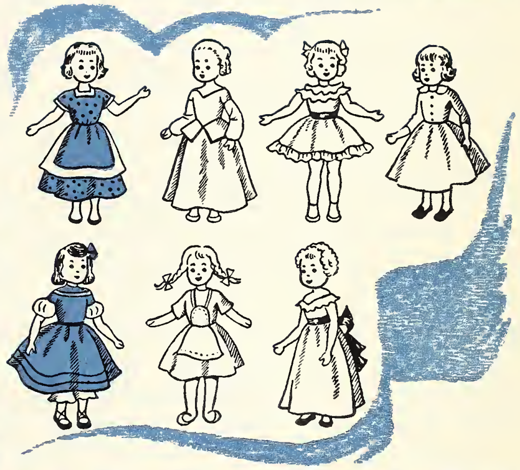

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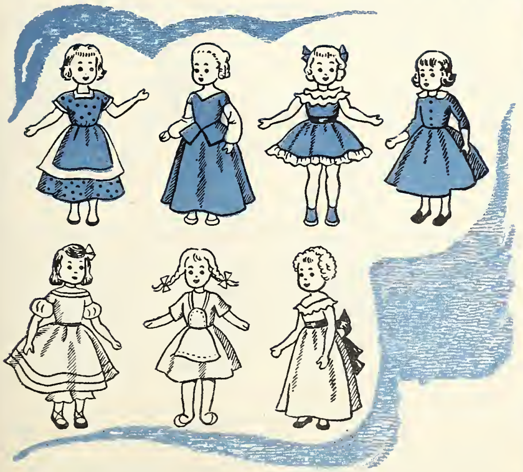

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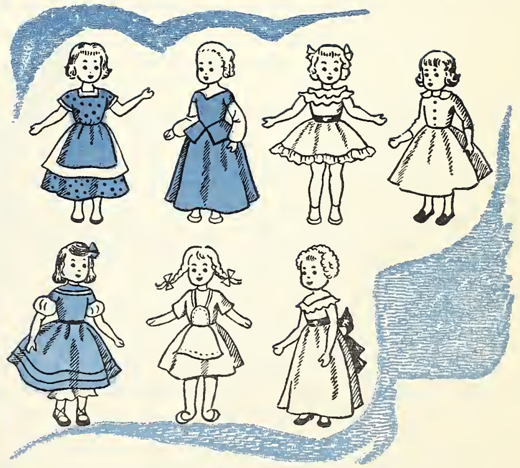

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LEARNING ABOUT GROUPS OF EIGHT

Preparatory Activities

The children's experiences with the number *8* may be extended at this time to include the discovery of the subgroups that are possible within a group of 8 objects. The necessary material is provided on page 53 of the pupil's book.

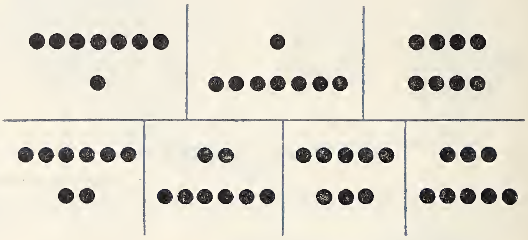
Using realistic arrangements. The teacher may have 8 girls pretend they are ladies working at home. Seven ladies may be sewing. One lady may be dusting. These questions may be asked:

How many ladies are sewing? How many are dusting? How many ladies are there?

The subgroups may be changed so that these arrangements are shown informally, one after the other. The same three questions may be asked about each arrangement.

1 lady sewing and 7 ladies dusting
6 ladies sewing and 2 ladies dusting
2 ladies sewing and 6 ladies dusting
5 ladies sewing and 3 ladies dusting
3 ladies sewing and 5 ladies dusting
4 ladies sewing and 4 ladies dusting

Using patterned arrangements. The children may use their counting objects at their desks to discover the subgroups within groups of 8. When the exercise is completed, these arrangements may be seen on each child's desk:



The teacher may direct the building of the first group in this way:

Put 7 counters on the desk. Put 1 more counter below them. How many counters are there altogether?

Then the directions may be repeated for building arrangements of 1 and 7, 6 and 2, 2 and 6, 5 and 3, 3 and 5, and 4 and 4.

Using Page 53

Focus attention upon the kites in the top picture at the left. Then ask these questions:

How many blue kites are there in this picture? How many white kites are there? How many kites are in this picture?

The children count the kites and write the answer to the last question.

The same procedure may be used for each of the other pictures. The questions should be asked in the same sequence each time so that all of the arrangements will be seen.

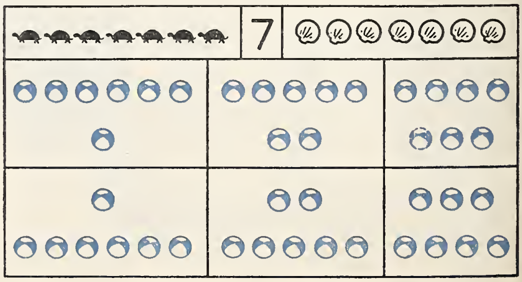
Follow-up Activities

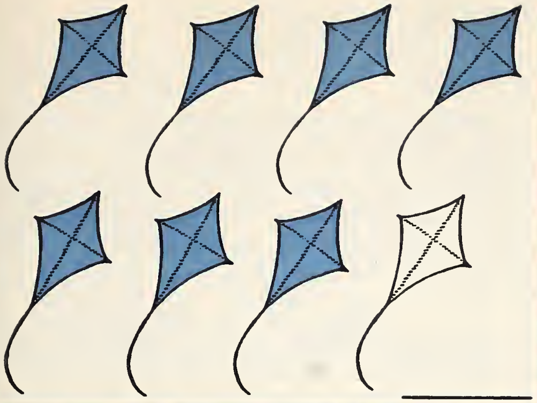
Additional learning helps. If some children need further help, they may build the groups with erasers, pretending the erasers are puppies. These questions may be asked:

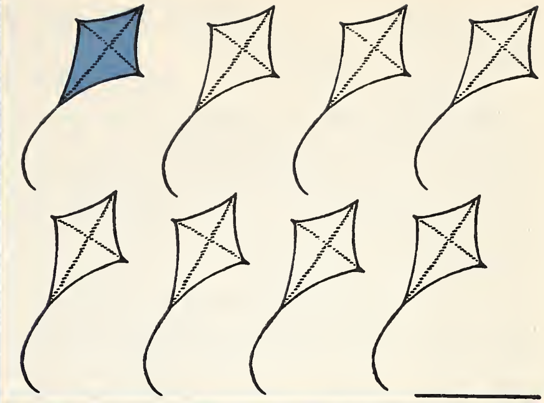
How many puppies are standing? How many are lying down? How many puppies are there?

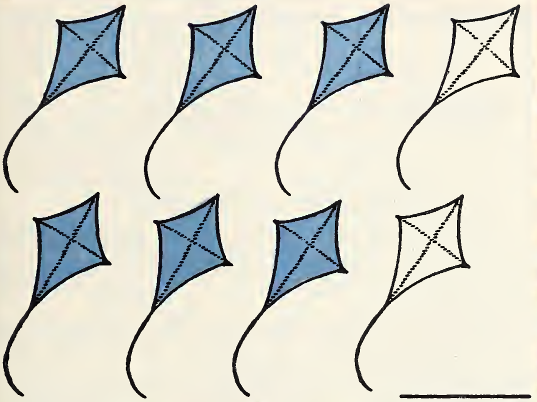
Then the children may build the groups again with their counting objects.

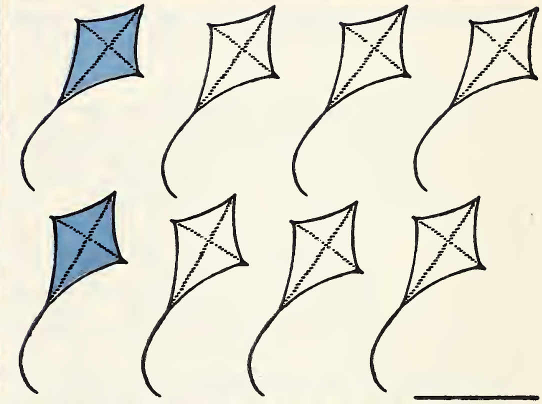
Enrichment activities. The faster learners may make illustrated group cards for 8. They may assemble all of the things on the arithmetic table that illustrate the numbers to *10.* These may be displayed. Among the materials that will be displayed for each number are the following:

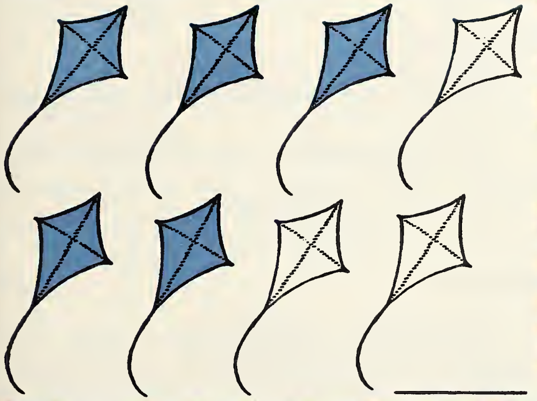


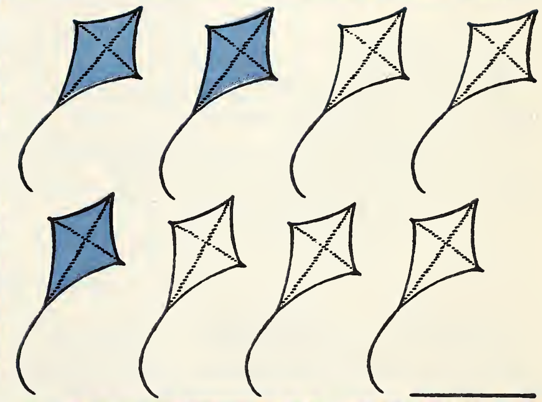


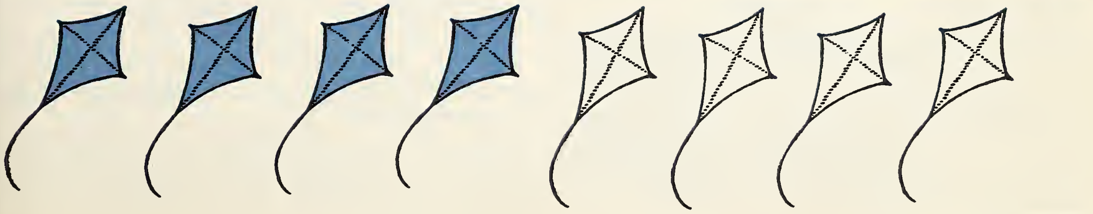












LEARNING ABOUT GROUPS OF NINE

Preparatory Activities

The children may now learn more fully the meaning of the number 9 through experiences in discovering the subgroups that can make up the number. The pupil's book provides semiconcrete, or pictured, exercises for these experiences on page 54.

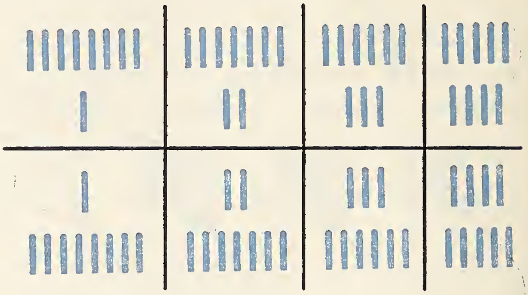
Using realistic arrangements. The children may pretend that 9 boys are policemen. The teacher may arrange informally 8 policemen in cars (chairs) and 1 policeman walking. The following questions may be asked:

How many policemen are riding? How many are walking? How many policemen are there?

The subgroups may be changed so that these arrangements are shown informally, one after the other. The same three questions may be asked about each arrangement.

1 policeman riding and 8 policemen walking
7 policemen riding and 2 policemen walking
2 policemen riding and 7 policemen walking
6 policemen riding and 3 policemen walking
3 policemen riding and 6 policemen walking
5 policemen riding and 4 policemen walking
4 policemen riding and 5 policemen walking

Using patterned arrangements. The children may use their counting objects at their desks to discover the subgroups within groups of 9. When the exercise is completed, all of the following arrangements may be seen on each child's desk.



These directions may be given:

Place 8 counters on the desk. Place 1 more counter below them. How many counters are there?

Then the directions may be repeated for building arrangements of 1 and 8, 7 and 2, 2 and 7, 6 and 3, 3 and 6, 5 and 4, and 4 and 5.

Using Page 54

Help the children find the picture at the left in the top row. Then ask:

How many red taxis are in this picture? How many white taxis are there? How many taxis are there in this picture?

The children write the answer to the last question.

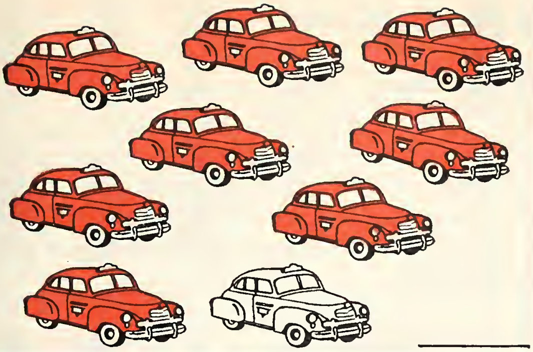
The same procedure may be used for each of the other pictures. The same sequence of questions should be followed each time.

Follow-up Activities

Additional learning helps. If there are children who need help with groups of 9, they may be helped to build the groups again with large objects, such as books, boxes, or chairs.

The children should build the groups again with their counting objects, each child working independently. If it seems advisable, the children may make study cards for the groups by drawing rings, making tally marks, or pasting circles or squares of art paper to illustrate the groups.

Enrichment activities. The children who do not need help with groups of 9 may do any other work they need to do. Then they may choose materials from the arithmetic table to work with. Some of the children may be interested in making cards with pictures to illustrate groups of 9. Others may be able to find, in magazines or in books, pictures of parades, rows of toys, rows of animals, or rows of children. These will be needed soon when the positional terms *first*, *next*, and *last* are introduced.



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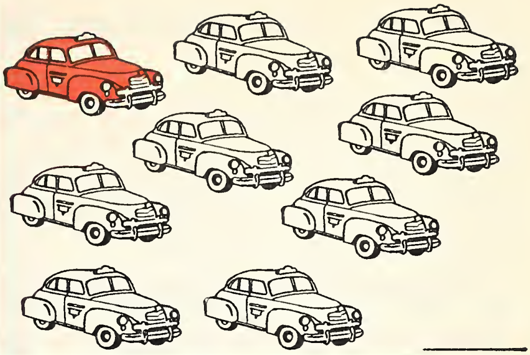

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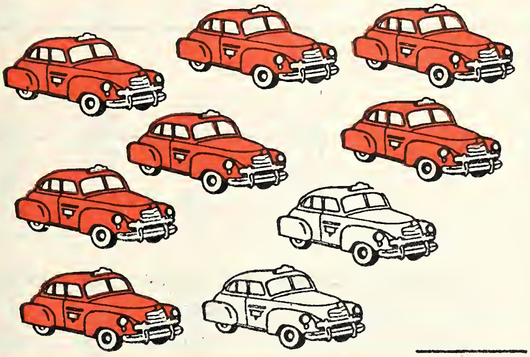

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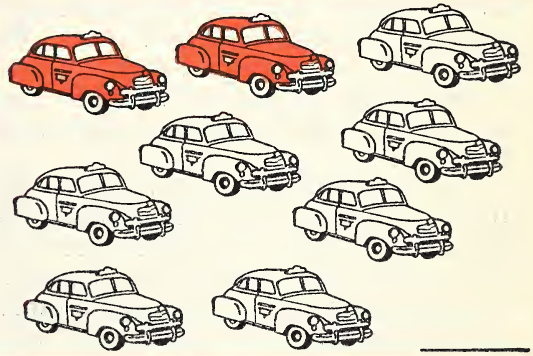

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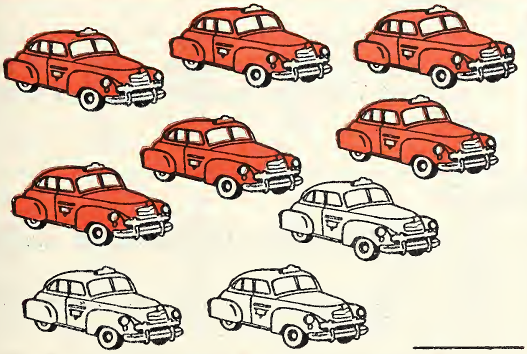

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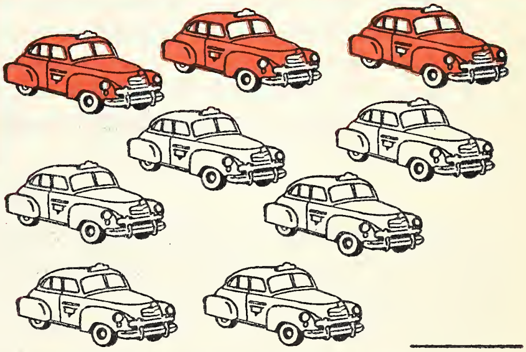

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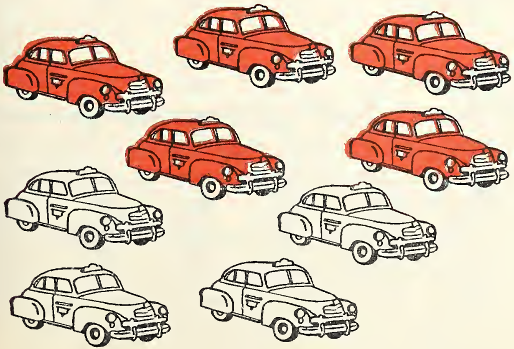

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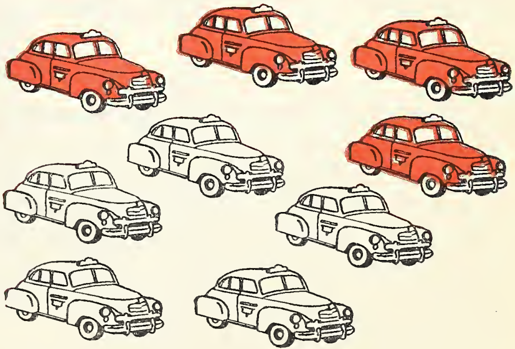

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LEARNING ABOUT GROUPS OF TEN

Preparatory Activities

Experiences which will help the children discover the subgroups that may be found within a group of 10 may be given at this time. Exercises for this purpose are offered on page 55 of the pupil's book.

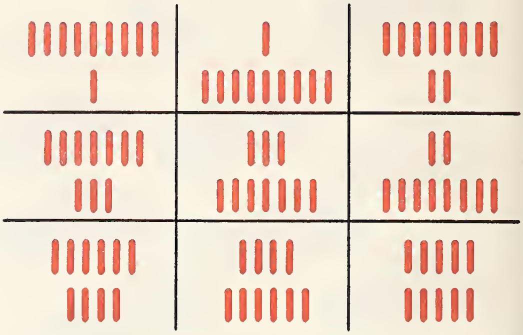
Using realistic arrangements. The teacher may use a group of 10 children to show the subgroups within a group of 10. The children may pretend that they are Indians in a television play. Nine Indians may be hunting and 1 Indian may be in a canoe. The teacher may ask these questions:

How many Indians are hunting? How many are in canoes? How many Indians are there?

The subgroups may be changed so that these arrangements are shown informally, one after the other. The same three questions may be asked about each arrangement.

1 Indian hunting and 9 Indians in canoes
8 Indians hunting and 2 Indians in canoes
2 Indians hunting and 8 Indians in canoes
7 Indians hunting and 3 Indians in canoes
3 Indians hunting and 7 Indians in canoes
6 Indians hunting and 4 Indians in canoes
4 Indians hunting and 6 Indians in canoes
5 Indians hunting and 5 Indians in canoes

Using patterned arrangements. The children may use their counting objects at their desks to discover the subgroups within groups of 10. These arrangements should be seen on each desk when the activity is completed.



These directions may be given for building the first group arrangement:

Put 9 counters on the desk. Put 1 more below it. How many counters are there altogether?

Then the directions may be repeated for building these arrangements: 1 and 9, 8 and 2, 2 and 8, 7 and 3, 3 and 7, 6 and 4, 4 and 6, and 5 and 5.

Using Page 55

Help the children focus attention on the picture at the left in the top row. Then ask these questions:

How many sailors have blue uniforms? How many sailors have white uniforms? How many sailors are there in this picture?

The children write the answer to the last question.

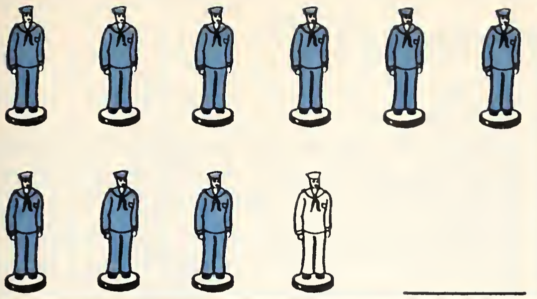
The same procedure may be followed for each of the other pictures on the page. The questions should be asked in the same order each time.

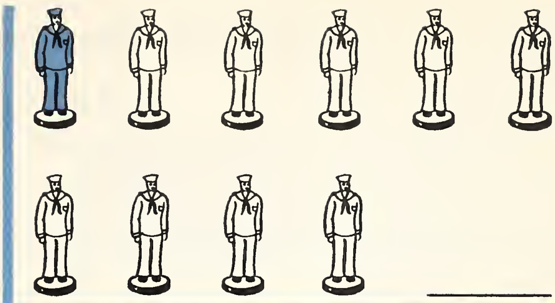
Follow-up Activities

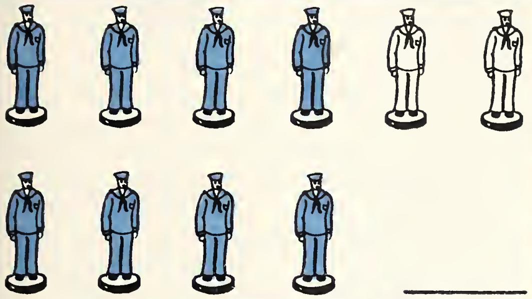
Additional learning helps. If there are any children who need more experiences with groups of 10, the teacher may help them discover the groups again in informal arrangements with large objects. For example, they may pretend that boxes of crayons are boats. In the arrangements, some boats may be sailing and others may be at the pier.

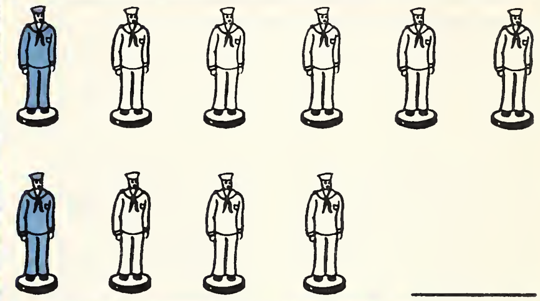
Then the children may use their counting objects to build again the subgroups to make groups of 10. They may also make cards with pictures of circles, squares, etc., to illustrate the groups.

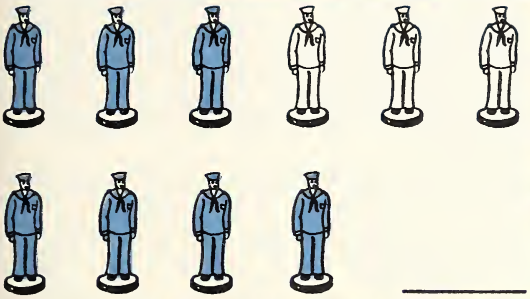
Enrichment activities. The children who do not need help with groups may choose other work to do. Some of them may wish to make cards to illustrate the various arrangements of groups of 10.

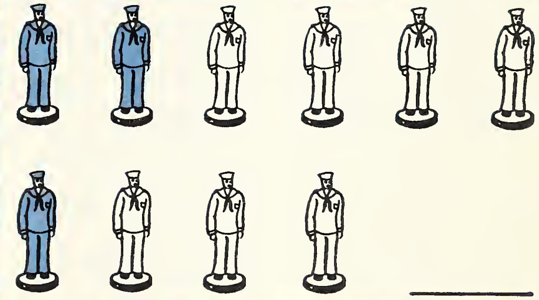


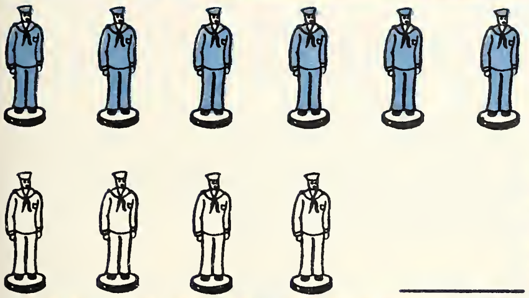


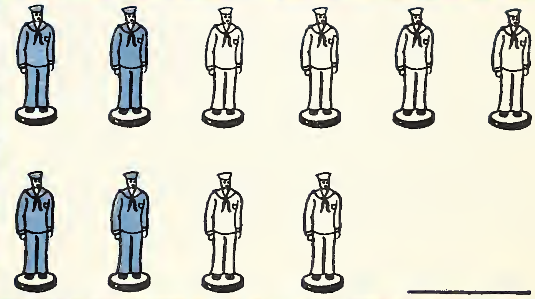


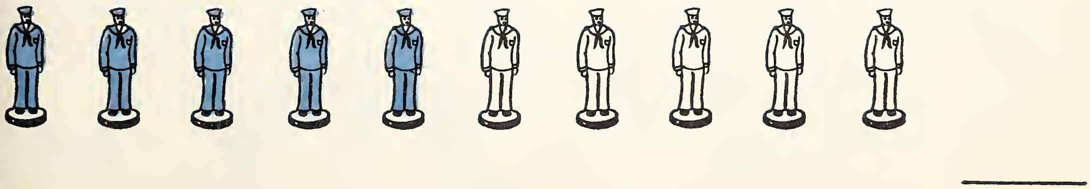












LEARNING TERMS: *FIRST, NEXT,* AND *LAST*

Preparatory Activities

The ordinal number *first,* and the positional terms *next* and *last,* may be introduced at this time as part of the oral vocabulary of arithmetic. Illustrated exercises for this purpose are given on page 56 of the pupil's book.

Utilizing classroom experiences. Meaningful classroom experiences can best be used to introduce the terms and help the children attach meaning to them. For example, the children are in the first grade in school. There may be a first row or a first group of tables and chairs. John may sit in the first seat, Mary in the next seat, and Alan in the last seat in the reading circle, etc. In the room parade, when the children march around the gymnasium, and when they line up for games, there is always a first, next, and last child in each line. Any of these situations may be used to introduce the terms and, later, to maintain the children's understanding of them.

The understanding must be developed that order and direction are important in designating the first, next, and last in a series of objects. If we are counting from left to right, the first is at the left. If we are counting from right to left, the first is at the right. To establish this understanding, the following experiences may be provided:

A group of 5 or more children may be lined up to march around the room facing left. The teacher may ask:

Who is first in line? Who is next? Who is last?

The children may stand where they are, but each child may turn to face right. The questions may be repeated. Then the group may all face forward. The teacher may point out that now we must say which child is first. We may ask:

Which child is first when we count from left to right? Which child is first when we count from right to left?

Now the terms may be used in locating materials. In a story on the blackboard, the first, next, and last sentences may be identified. In rows of pictures on the bulletin board, the first, next, and last rows may be identified.

Concrete objects may be used to develop the concepts further. A toy parade, a parade of pets, a shelf of books, and rows of chairs or desks may be used.

Using Page 56

Show the children that the first parade is at the top of the page. Have them make a green line under it. Have them make a blue line under the next parade on the page, and a yellow line under the last parade.

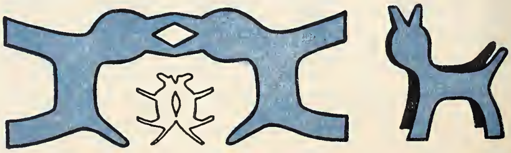
Point out the clown in the black coat as the first in the parade at the top of the page. Have them make a green ring around him, a blue ring around the next clown, and a yellow ring around the last clown.

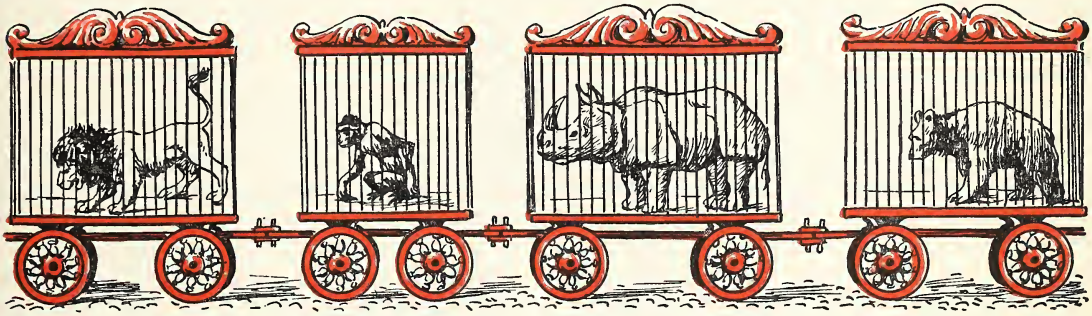
Have them make a green ring around the first, a blue ring around the next, and a yellow ring around the last animal in each of the other parades on the page.

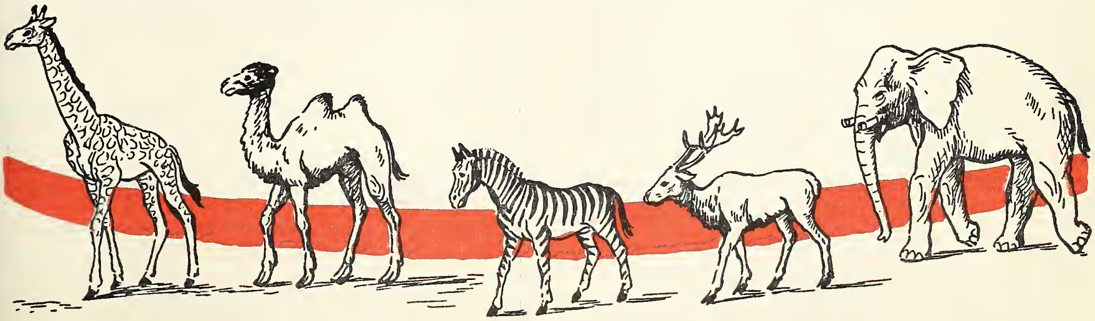
Follow-up Activities

Additional learning helps. If there are any children who do not understand the terms, the suggestions given under the preparatory activities may be used again. Then the children may make pictures of parades of pets, rows of toys, etc. They may tell which is first, next, and last in each parade.

Enrichment activities. The children who do not need help may cut toys out of folded paper to make parades illustrating *first, next,* and *last.* For example:







POSITIONAL TERMS: *ABOVE* AND *BELOW*

Preparatory Activities

The positional terms *above* and *below* are needed by the children in connection with writing examples in addition and subtraction as well as in locating materials on a page and in following directions. An exercise is provided on page 57 in the pupil's book to make sure the terms are understood.

Using realistic experiences. The teacher may call attention to things in the room that are above and below other things. There may be a flag above the blackboard, a clock above the door, and a chalk tray below the blackboard. A picture of a parade may be above pictures of groups of 10 on the bulletin board, etc.

The terms may be illustrated in a drawing on the blackboard. For example, a row of toys may be drawn. Then a row of animals may be drawn below the toys. Next, a row of trees may be drawn. The children may tell which things in the picture are above the animals, and which things are below the animals. Then they may tell which animal is below the first toy in the row of toys, which toy is above the next animal in the row, which animal is below the last toy in the row, etc.

Then a child may write the number 7 on the blackboard. Another child may write 5 above it. Another child may write 3 below the 7, etc.

Using Page 57

Help the children identify the picture as that of a child's room. Ask them what kind of pictures are above the banner (bird); and what kind of pictures are below the banner (animal). They may identify the birds and animals if desired. Then have them draw a ring around each picture that is above the banner, and put an X by each picture that is below the banner.

In the next exercise, have the children draw a ring around each picture that is above the red line. Have them put an X by each picture that is below the red line.

Help the children find the red line at the bottom of the page. Have them draw an animal above the red line and a flower below the red line. If there is any doubt about the ability of some of the children to draw these things, have them put a ball above the red line and a box below the red line.

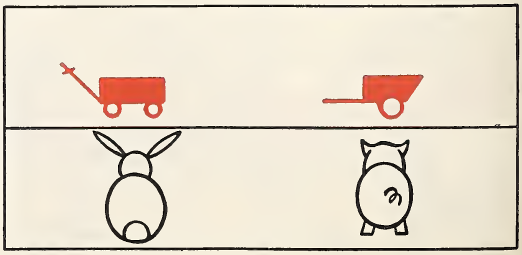
Follow-up Activities

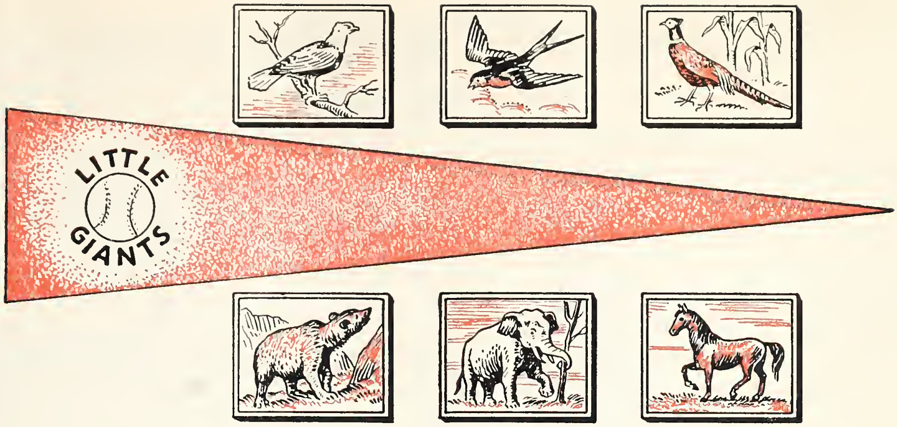
Additional learning helps. If there are any children who need more help in understanding the terms *above* and *below*, experiences such as those suggested as preparatory activities may be provided. Following these realistic experiences, concrete objects may be used. For example, the children may hold a book above their heads, and then below their desk tops. They may put a picture on the bulletin board, another picture above it, and another picture below it, etc.

Pictures may be found which show things that are above and below, as, for example, the cabinets above and below the sink and working surfaces in a modern kitchen.

Following these experiences, an exercise similar to that in the book may be provided. For example, the children may draw a bird flying above a tree and an airplane flying below another airplane.

Enrichment activities. The faster learners may wish to make a picture for their folders or arithmetic scrapbooks to show what the terms *above* and *below* mean. For example:




LITTLE
GIANTS

LEARNING ABOUT THE NUMBERS *11* TO 20

Preparatory Activities

The numbers *11* to *20* may be introduced at this time. The children will learn to read and understand the symbols. The exercise on page 58 of the pupil's book provides for these experiences.

Demonstrating the tens and ones idea. The new concept to be developed is that each of the numbers from 11 to 20 is 10 and so many more. A group of 10 children may be assembled, and a child may count to find how many there are. Then 1 more child may stand beside the 10, and a child may count from 1 to 11 to find how many there are. The number may be written on the blackboard.

After this experience, the 1 child will sit down, but the group of 10 will remain. Then 2 more children may come and stand beside the 10, and a child may count from 1 to 12 to find how many there are. The number *12* may be written on the blackboard under the *11*. A child may tell what it is.

Then 2 children may sit down, and the 10 remain. This time 3 children may join them. It is not necessary to count the 10 children by ones each time. From now on, the children may say, "10, 11, 12, 13, etc." But care must be taken that the children understand that they are indicating the group of 10 when they say, "10," and not just one of the group. The number *13* may be written on the blackboard under the *11* and *12*.

The other numbers to 20 may be introduced one at a time in the same way. Care must be taken to begin each time with the group of 10 and increase it by putting with it another group of a specified number. For example, in building *14*, 10 and 4 will be put together. The children will not get the concept of *14* that is intended if they start with 13 and put 1 more with the 13.

When the exercise is completed, the numbers *11* to *20* will have been introduced and written in a column on the blackboard. However, much more experience with concrete objects will be needed to develop an understanding of the numbers, and the children will need to use the symbols often.

The counting sticks and the children's counting objects may be used so that each child can develop the number meanings for himself. Ten counters may be placed on the desk and left in a stack, a pile, or a row. Then each child may place 1 counter near the 10, then 2 counters, and so on, to 10.

Using Page 58

Let the children discover, by counting, that there are 10 Indians in each cardboard box, and that there are more Indians outside the box. Let them read the number, and count, "10, 11." Then bring out the idea that 11 means 10 and 1 more.

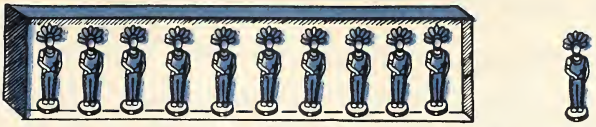
Let the children continue in the same way to 19, having them count the box of Indians as 10 each time and count the extra Indians as ones. Then develop the idea that 20 means 10 and 10 more, or 2 tens, using the last picture for this purpose.

Follow-up Activities

Additional learning helps. If some of the children need help, they may have another directed lesson in demonstrating what the numbers mean. For example, the number *11* may be written on a large piece of wrapping paper with lines 2 inches apart. Then a bundle of 10 counting sticks may be fastened beside it with tape, and 1 more stick fastened beside the 10. Then *12* may be written on the chart just below *11*. Another bundle of 10 counting sticks may be taped on, and 2 more sticks taped beside it. Thus, the chart can be built for study and reference later.

Enrichment activities. The faster learners may choose work to do at the arithmetic table. They may make more bundles of 10 counting sticks, since many will be needed.

11



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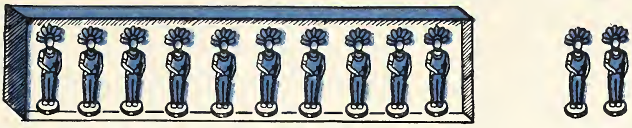

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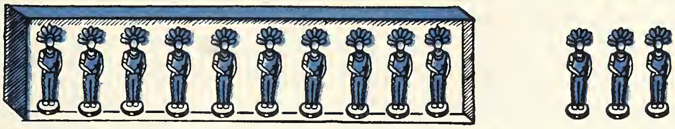

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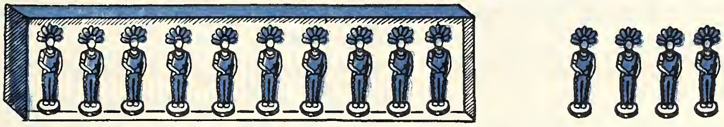

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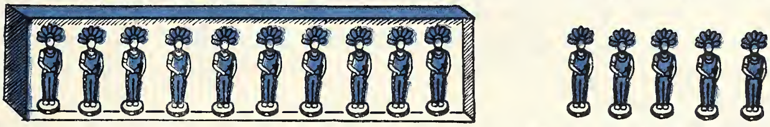

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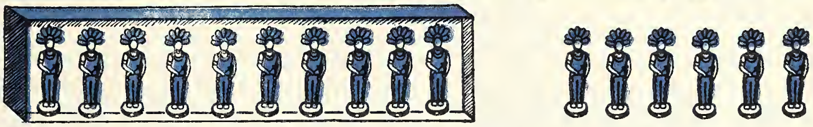

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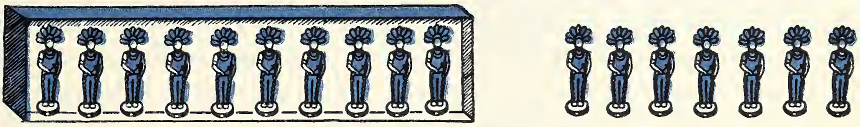

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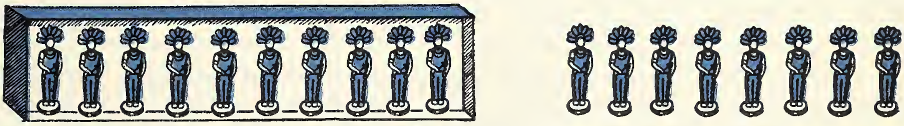

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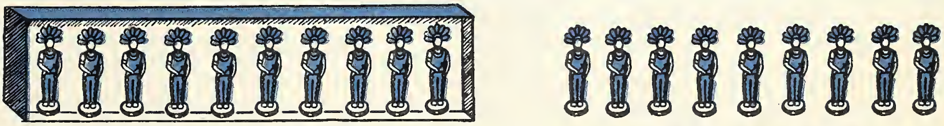

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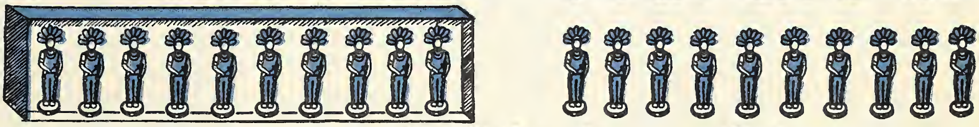


LEARNING RATIONAL COUNTING TO 20

Preparatory Activities

The children are now ready for experiences in rational counting. Page 59 of the pupil's book provides material for this learning step. The first use of reading occurs here also.

Motivated counting. The teacher will wish to use whatever opportunities classroom activities provide for purposeful and useful counting. If there is need to find the number of girls and the number of boys who are present, the children may count them. If there is need to find how many library books have been returned, the children may count them. These experiences in counting are rich in learning possibilities because they serve a useful purpose.

Using concrete objects. The teacher may ask a child to count the books on the reading shelf. Toys may be arranged on the table to be counted by various children. The arithmetic cards may be counted.

Following these experiences, the children may use their counting objects at their desks. First, they may count 10 objects. Then they may increase the number of objects to 20, one at a time, placing the counters on the desk as they enumerate them.

Using kinesthetic responses. An excellent way to get the number sequence in mind is to provide for rhythmic counting of movements, sounds, etc. For example, the children may tap, clap, or make marks with a pencil on paper as they count. Counting steps as they march to music is also a helpful activity.

Introducing words to be read. The words *tell, how,* and *many* appear in the direction on page 59. Since these words are to be read frequently from now on, they should be introduced and taught as reading words if they are not already in the children's reading vocabulary.

Using Page 59

The direction, "Tell how many," may be read by a child. The children may be told that sometimes there are words at the top of a page or above a picture in their arithmetic book that tell them what to do. These words mean to tell how many dolls there are.

The children may count together, orally, the storybook dolls, and tell how many they counted.

Then they may count the toy cowboys. Finally, they may count the toy men in the drum and bugle corps.

Follow-up Activities

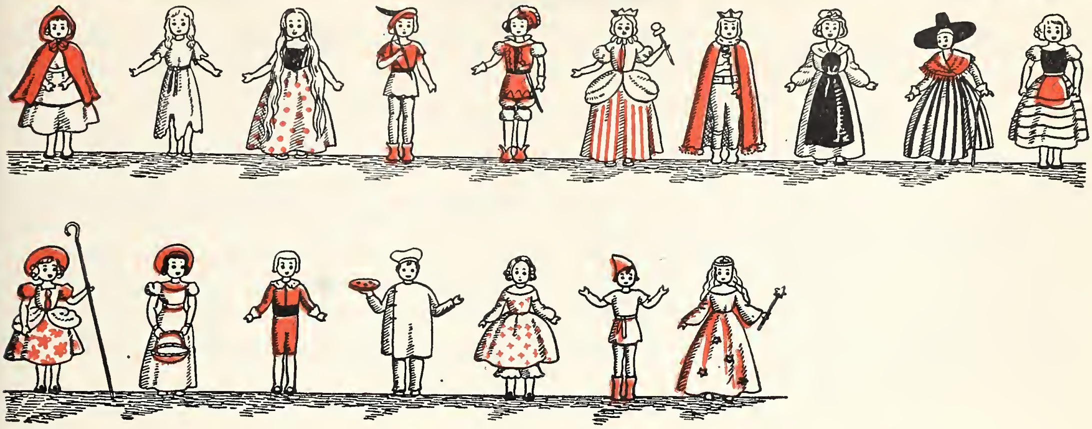
Additional learning helps. If there are any children who need more help, they may be asked to count things around the room as the teacher helps them. Then they may be given experiences in counting as the teacher bounces a ball or taps on the desk. If there are 20 children in the group practising counting, a game may be played in which a child counts around the group. He stops suddenly, and the child he names is to say the next number and go on counting. The counter decides in advance with which number he will stop counting. He keeps it in mind until he counts that far.

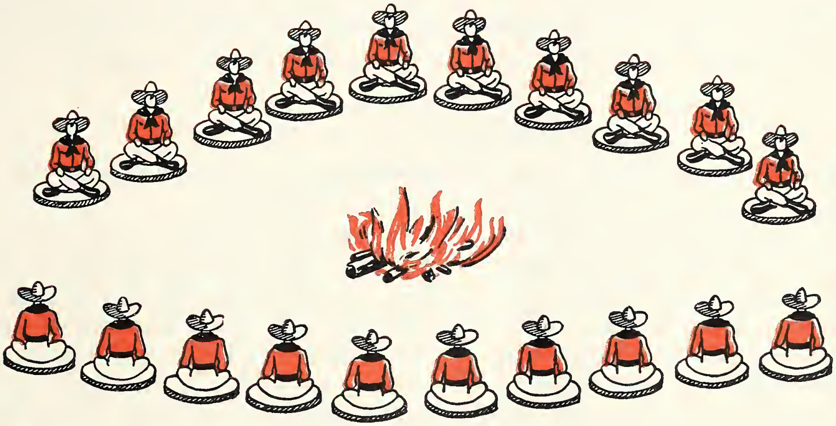
The children may count the objects in pictures in storybooks, readers, science books, etc., for further experiences.

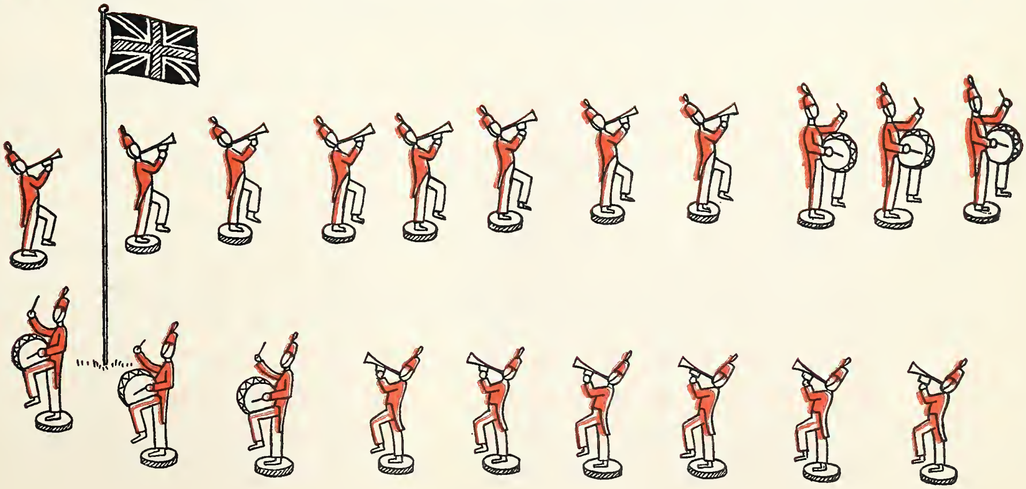
Enrichment activities. The faster learners may enjoy learning counting rhymes, as, for example:

One, two, buckle my shoe;
Three, four, shut the door;
Five, six, pick up sticks;
Seven, eight, lay them straight;
Nine, ten, a good fat hen;
Eleven, twelve, who will delve?
Thirteen, fourteen, maids a-courting;
Fifteen, sixteen, maids in the kitchen;
Seventeen, eighteen, maids a-waiting;
Nineteen, twenty, my plate is empty.

Tell how many.







LEARNING TO WRITE THE NUMBERS TO 20

Preparatory Activities

The next learning step for the children is to learn to write the numbers to 20. As they do so, they learn more about number sequence. Page 60 of the pupil's book provides exercises to help the children take this learning step.

Using the blackboard. Models of the numbers *1* to *20* may be written on the blackboard, and several children may be given an opportunity to write them. All of the children should have a turn before the exercise in the book is used.

As the children write, the teacher will make note of individual children who still need help in forming the symbols, who have difficulty in spacing two-place numbers correctly, or who are not sure of the number sequence to 20. While the other children write the numbers at their desks, the teacher may work with the children who need help. Perhaps showing them individually how to correct their mistakes at this time will enable them to use the exercise in their books with success.

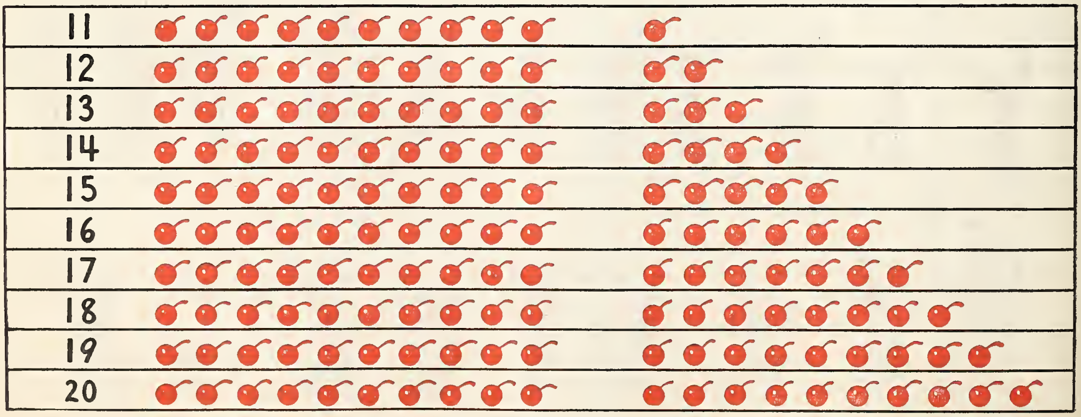
Using Page 60

The pupils may trace the models of the numbers *1* to *20* which appear in the first two columns. Then they may write the numbers in sequence from 1 to 10 and from 11 to 20. In the next exercise, they write the missing numbers—the even numbers only.

Follow-up Activities

Additional learning helps. If there are any children who need help in writing the numbers, the teacher will wish to work with them again. Each child may be given large models of the numbers he needs help with. The child may trace the numbers several times after the teacher shows him just how to write them. After he has traced the models, he may try again to write the numbers on unlined paper or at the blackboard. In this way he can make the numbers large, using his arm muscles instead of the small muscles in his fingers, which he may not be able to control at this time.

Enrichment activities. The faster learners may enjoy working together to make a large number chart for the bulletin board. Gummed seals, such as stars, squares, circles, pictures of birds, and flowers may be used. If seals are not available, circles and squares may be cut from art paper and pasted on the chart. Several children should work together to make the chart. It may be made as shown below:



1	11
2	12
3	13
4	14
5	15
6	16
7	17
8	18
9	19
10	20

1	11
3	13
5	15
7	17
9	19

LEARNING THE MEANING OF TWO-PLACE NUMBERS

Preparatory Activities

The children may now learn more fully the meaning of two-place numbers. In the exercise on page 61 of the pupil's book, each picture shows a group of 10 and so many more. The children write the number.

Using concrete objects. Up to this point the children have used concrete objects to show what two-place numbers mean. They are ready now to count objects as 10 and so many more and find what number they represent. The teacher may place on the table a stack of 10 books and 4 extra books. The children may be told that there are 10 books in the stack. They count to find how many books are on the table, beginning with 10. They may write the number *14* on the blackboard.

The stack of 10 books may remain, but 6 extra books may be placed on the table. The children count again to find how many there are. The numbers *11* to *20* may all be developed in this way, in miscellaneous order.

Each child may be given several bundles of counting sticks, toothpicks, milk straws, etc., which were prepared earlier. They may place 10 and some extra sticks on the desk and count to find the number. It may be feasible to have the children work in pairs. One child may place the counters on the desk, and the other may count to find the number. When all of the numbers to 20 have been shown, the two children may change places and do them again.

Using Page 61

Have the children read the sentence at the top of the page. Explain that this time it means to write a number to tell how many flowers there are in each picture. Call attention to the spaces provided for writing the numbers. Then help the children do the first exercise.

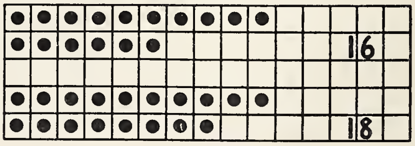
Let them find that there are 10 flowers in the window box. Then let them count the flowers that are out of the box, saying, "11, 12, 13, 14, 15." Help them to understand where to write the *15*.

Help the children discover that there are 10 flowers in each of the boxes on the page. Have them count each box of flowers as 10, and then count the extra flowers, thinking "11" if there is 1 extra flower, "12" if there are 2 extra flowers, etc. Have them write the number each time. They may work independently while the teacher supervises.

Follow-up Activities

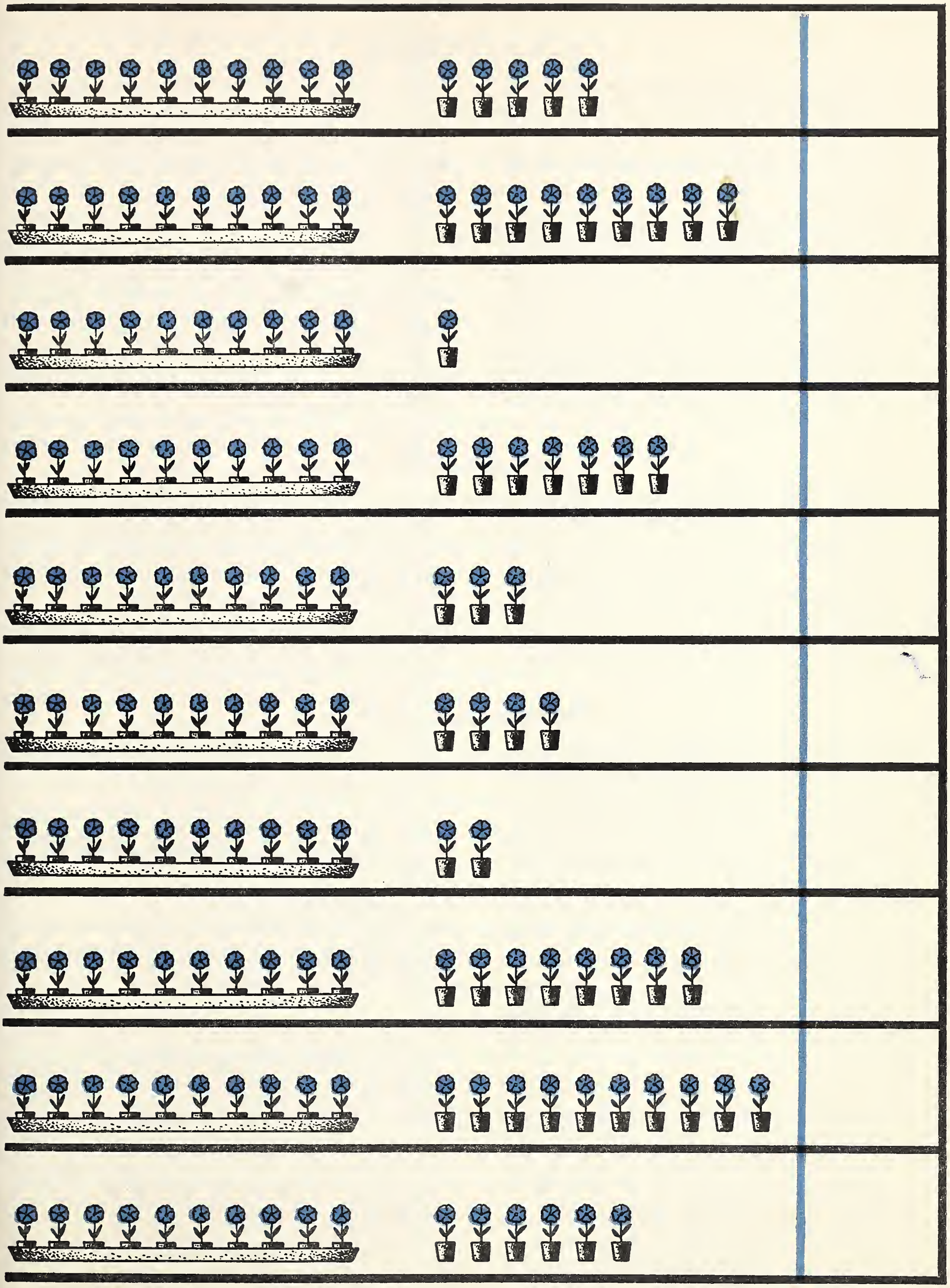
Additional learning helps. The children who had difficulty may be given more experience with concrete materials. Place bundles of ten sticks, and extra sticks, on the chalk tray to illustrate the numbers *11* to *20*. The numbers should be shown out of sequence. The teacher may work with these children individually, helping each child to find the number and write it on his paper or on the blackboard.

When the teacher is sure each child understands what he is to do and how to do it, the children may choose partners and work at their desks with counting sticks to illustrate and write the numbers. Then they may be given squared paper on which to make pictures and write the numbers. This plan is suggested:



Enrichment activities. The children who do not need help at this time may make pictures for their folders or scrapbooks to show what the numbers *11* to *20* mean.

Tell how many.



SHOWING WHAT TWO-PLACE NUMBERS MEAN

Preparatory Activities

The concept of 10 and so many more may now be used by the children to show what two-place numbers mean. The exercise on page 62 of the pupil's book provides material for this learning step.

Using concrete objects. Concrete objects may be used first for a group exercise. For example, bundles of 10 rulers or pencils may be placed on a table with several single rulers or pencils. The teacher may ask a child to show with a bundle of 10 rulers and some single rulers what the number *13* means. The child, with the help of the teacher if it is needed, will write the number on the blackboard and place on a table a bundle of 10 rulers, and 3 single rulers. Then the number *17* may be illustrated by another child, and so on, until all of the numbers from 11 to 20 have been illustrated.

The children may work at their desks with bundles of 10 counting sticks and single sticks. They may place on their desks a bundle of 10 and so many more to illustrate each number as the teacher writes it on the blackboard. The teacher will observe and help as help is needed.

Using Page 62

Help the children discover that there are 10 beads on each string on the page. Then call attention to the number *11*. Have the children find how many single beads there are with the 10, and tell how many beads are in the picture.

Follow the same procedure with the number *14*. Then explain to the children that they are to draw more beads with the 10 in each of the other pictures to show what the number in the picture means. The children may work independently, drawing more beads to illustrate each number, while the teacher observes and gives individual help.

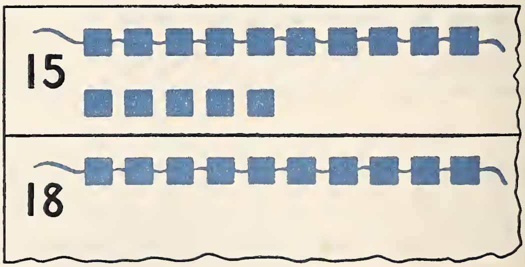
Follow-up Activities

Additional learning helps. If some of the children had difficulty with the exercise in their books, it will be well for them to use concrete objects again. Familiar objects, such as books, pennies, or pencils, may be used if it seems advisable.

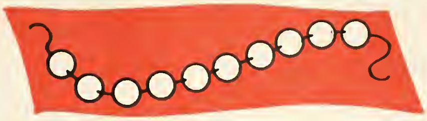
The teacher may ask a child to show with pennies what the number *12* means. The child may count 12 pennies. Then the teacher may ask how many more than 10 he counted. He separates the 10 pennies from the others and finds that he has 10 and 2 more, or 12 in all.

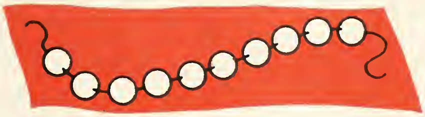
After each of the numbers has been developed in this way, the children may use their counting sticks to show with tens and ones what the numbers mean. Perhaps this time each child should make a bundle or group of 10 objects. He may place the extra objects with the 10, counting as he proceeds.

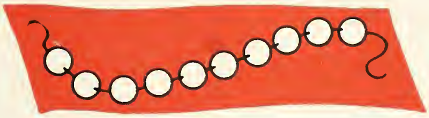
If the teacher wishes, she may prepare an exercise similar to the exercise in the pupil's book, and mimeograph or hectograph it. For example, squares may be used:

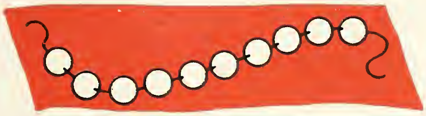


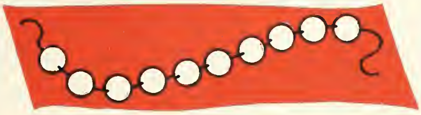
Enrichment activities. The faster learners may find other things to do at this time. Some may wish to play store or bank and practise counting money, since the exercises on the next page of their books will involve money. Others may wish to add illustrations of the meaning of two-place numbers to their arithmetic folders or scrapbooks. Still others may wish to make cut-out animals and toys to use when addition is introduced.

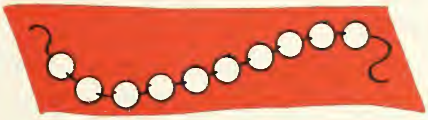
11 

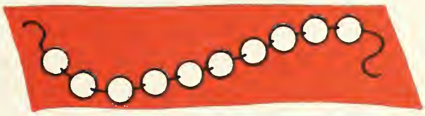
14 

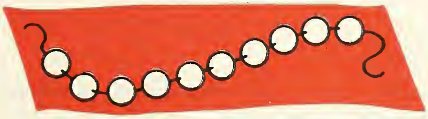
19 

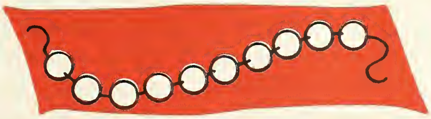
16 

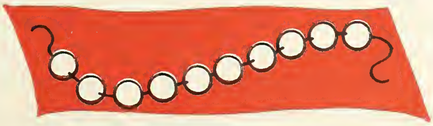
15 

13 

20 

18 

12 

17 

COUNTING COINS BY FIVES AND TENS

Preparatory Activities

The children may now extend their understanding of counting to include counting by fives and tens to 20. They will also learn more fully the relationships among the coins. Page 63 of the pupil's book provides exercises for this purpose.

Counting actual coins and toy money. The first experiences with counting to 20 by fives and tens should be with actual coins if that is feasible. If not, make-believe money may be used. The teacher may place on the table 20 pennies arranged in a row, but separated into groups of 5 pennies each. At first, the children may count the pennies by ones; then, by fives. The teacher may write the numbers *5, 10, 15, 20,* as the children count by fives. She may say that the *20* means 20 cents.

Then 4 nickels may be placed below the groups of pennies, with 1 nickel under each group of 5 pennies. The children may be helped to review the fact that a nickel will buy as much as 5 pennies, and is as much money as 5 pennies. Then the nickels may be counted as fives, and the numbers written as they are said. Again, the teacher may point out that the *20* means 20 cents.

Two groups of 10 pennies each may be placed on the table just below the nickels. The children may count them by ones and by tens. The teacher may write the numbers *10, 20,* as the children count by tens.

Two dimes may be placed on the table, with 1 dime below each group of 10 pennies. The children may be helped to review the fact that a dime will buy as much as 10 pennies, and is as much money as 10 pennies. Then the dimes may be counted as tens, the teacher writing *10, 20,* as the children count.

The children may be helped to review the fact that a dime will buy as much as 2 nickels. Then they may be helped to see that 2 dimes will buy as much as 4 nickels.

Using Page 63

Tell the children that there are 5 coins in each group of pennies at the top of the page. Have them count the pennies in the top row by fives and trace the numbers as they count. Then ask how many cents 20 pennies are. Help them understand that the 20 pennies they counted are the same as 20 cents.

Have them count the nickels as fives and write the numbers they say. Bring out the fact that the *20* means 20 cents.

Have them count the groups of 10 pennies by tens and trace the numbers. Emphasize the fact that the *20* means 20 cents.

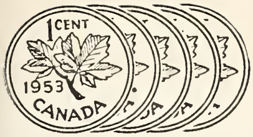
Have the children count the dimes as tens and write the numbers they say. Explain that the *20* means 20 cents.

Follow-up Activities

Additional learning helps. If there are any children who need more help in counting by fives and tens to 20, or in understanding the relationships among the coins, they may be given further experiences in counting coins. It may be helpful to relate the counting to a realistic situation. For example, have the children pretend to buy a box of crayons for 20 cents. Have them pay for the crayons with pennies. They may count by fives as they pay for the crayons. Then ask a child to pay for the crayons with nickels. He may count the nickels as fives. Continue in the same way with pennies in groups of 10, and with dimes.

Then the children may practise exchanging coins for other coins. For example, they may exchange 20 pennies for nickels, 2 dimes for pennies, 2 dimes for nickels, etc.

Enrichment activities. The faster learners may draw, or find in magazines, pictures of things that cost 20 cents, and cut them out to use in the play store. Then they may pretend to buy various 20-cent items and pay for them with toy money, using 20 pennies, 4 nickels, or 2 dimes.



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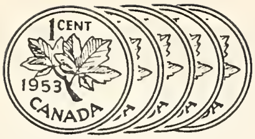

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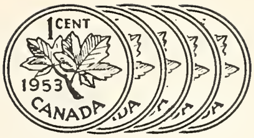

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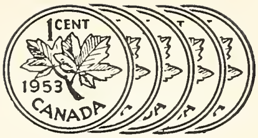

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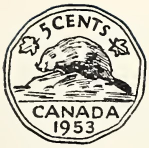

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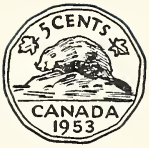

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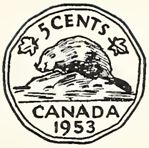

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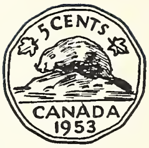

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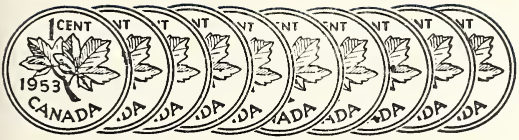

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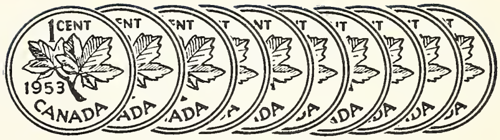

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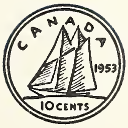

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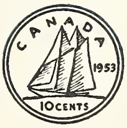

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MAKING SURE OF THE NUMBERS TO 20

Preparatory Activities

The sixth in the series of "Making Sure" tests is provided on page 64. It is planned to help the teacher and the children find what progress has been made in writing the numbers to 20 and in understanding the sequence of the numbers. Since the test is meant to be diagnostic, no preparatory activities are necessary.

Using Page 64

The children should read the numbers from 1 to 20 in sequence.

The children may write the numbers from 1 to 10 and from 11 to 20 in the red boxes. Then they may write in the black boxes the numbers that are missing.

Follow-up Activities

The teacher will wish to make a careful evaluation of each child's work on the test. She will first wish to find which, if any, of the number symbols are difficult for the child to make. Since the symbols will be used in connection with the work from this point on, each child should be helped again with those that he cannot write well.

The teacher will be concerned also to find which children, if any, do not understand the number sequence from 1 to 20. Having the children write the numbers in columns of 10 helps to emphasize the decades of our number system. The children who were unable to write the numbers in sequence and in columns will require help in overcoming these difficulties. Soon the numbers to 50 will be introduced. They too will need to be written in columns to develop further the tens, or decades, idea. The children will not be ready for these new steps unless they can overcome any difficulty they had with the numbers to 20.

These slower learners will not need to retrace all of the learning steps. There may be only a few number symbols that are causing trouble for individual children. As soon as each child has overcome his specific trouble, he may work with the other children.

As was pointed out earlier, learning is an individual, personal matter. The fact that a child has difficulty does not need to become a cause for discouragement. By the teacher's approach to the problem, she can help the individual child and the group as a whole to accept the needed help in arithmetic just as they would accept help in learning to make a birthday card for a friend. As long as the teacher's attitude and manner encourage the willing acceptance of needed help, the slower learners will retain their self-respect and the respect of the group as a whole.

Additional learning helps. Children who had difficulty in writing any of the number symbols may be given cards with models of the specific numbers that need attention. First, a blackboard exercise in tracing the numbers and writing them may be provided. Then the children may work at their desks, using models as an aid in forming correctly the symbols that are difficult for them.

The teacher will try to work with each child to point out the causes of his specific difficulties and help him overcome them. If some of these children are having difficulty because they are physically immature, the teacher will take that into account as she works with them.

Those children who do not understand the number sequence may use the illustrated number charts which were made earlier. Then they may use 20 of their counting objects to practise counting. They may write the numbers they say as they count.

Enrichment activities. The children who do not need further help at this time may use some of the materials on the arithmetic table. They may wish to play store or bank again, and practise counting money, using the toy money.

1	11
2	12
3	13
4	14
5	15
6	16
7	17
8	18
9	19
10	20

2	
	13
	15
6	
	17
10	

LEARNING TO ADD

Many experiences have been provided earlier which have prepared the children for the introduction of addition. The various activities and experiences suggested have afforded opportunities to count, to develop an understanding of the numbers *1* to *10* and *11* to *20*, and to illustrate groups of 2 to 10 with concrete and semiconcrete objects. In the course of these activities and experiences, the pupils have had many opportunities to observe that the size of a small group is increased when one or more objects are added to it, and that a larger group may be made by combining two smaller groups. They have also seen the various arrangements of subgroups in larger groups in the course of their experiences with the numbers to 10 and in the section on grouping.

The pupils are now ready for the next learning step. First, they look again at a specific arrangement of subgroups in a larger group. This arrangement parallels the addition fact which is to be introduced immediately. After refreshing their understanding that a subgroup of 2 and another subgroup of 2 make up a larger group of 4, they determine the number in the larger group by *adding*. That is, they learn to "think the groups together," instead of counting to find the number in the larger group. Plans for taking this learning step will be provided in this section of the Teacher's Edition and the pupil's book.

The 15 addition facts with sums of 6 or less will be introduced. However, the addition process with these facts will be carried through the concrete and the semiconcrete stages only. At this grade level, the pupils will think of the facts only in terms of objects which they can see or which they can visualize. In the *Making Sure of Arithmetic* program, the transition to abstract examples and facts is made in the learning program for Grade Two.

The Basic Steps in Learning to Add

The basic steps which are used in helping the children learn to add are as follows:

(1) The first objective is to develop an understanding of the meaning of addition. Realistic situations in story form (problems) are stated by the teacher and used to develop the concept of addition. The first addition situations presented must lend themselves to dramatization within the classroom, so that the children can actually see two smaller groups, or 1 and a group, being combined to make a larger group. After the dramatization, the fact itself—for example, "2 crayons and 2 crayons are 4 crayons" – should be emphasized and illustrated concretely as the first step toward the generalized understanding that 2 and 2 of anything are 4. As stated before, this abstract understanding is not fully reached by the children until after the reteaching section of the Grade Two program has been completed.

(2) As the next step, the children build the addition facts with their small concrete objects. As they place a small group on the desk and place another with it, they see the two small groups which are to be combined (the addends). When they actually put these groups together and find how many there are, they again visualize the addition taking place. This manipulative step is vital to an understanding of the meaning of addition.

(3) The third step is taken in the pupil's book. This book provides semiconcrete (pictured) materials which illustrate a number story (problem) told orally by the teacher. The number story introduces the addition fact. Action pictures illustrate both the fact and the meaning of the addition process. The first action picture for each fact shows the two smaller groups in the act of combining. The second picture shows the larger group (the answer) resulting from this act of combining.

(4) The pupil's book next provides static pictures – the action picture reduced to its essentials. The central figures from the action picture are reproduced in smaller size and used to help the child state the addition fact, that is, the example from the illustrated number story with its answer.

(5) In the next step, again in the pupil's book, a single action picture is used to illustrate a number story which is told orally by the teacher. This picture shows the groups

in the act of combining but does not show the completed action. The question which the child reads helps him to complete the action—to add and give the answer. Then he writes the fact in vertical form.

(6) Next, the facts that have been introduced are used in examples in which the numbers are at first identified by pictures. Later the numbers are identified by words instead of pictures. In these examples, the situation is not stated in story form. The pupil will see an example such as the one at the right. He will think, "2 tops and 1 top are how many tops?" He will give the answer, "3 tops." This step might be called the semi-abstract stage in the development of addition, since the omission of the words would make the example entirely abstract.

$$\begin{array}{r} 2 \text{ tops} \\ \underline{1 \text{ top}} \\ \underline{} \text{ tops} \end{array}$$

(7) Next, the facts that have been introduced are used in oral number stories told by the teacher. Pictures that illustrate these oral number stories are provided in the pupil's book. The child adds and writes the answers.

In Grade One the addition sign (plus sign) is not taught because it is not needed. The need for this sign does not arise until the child has to distinguish addition examples from subtraction examples. At this level the two processes are not brought together. This step is part of the Grade Two program.

Later in the Grade One program, the facts already learned may be used in very simple number stories which are to be solved orally, without being dramatized or illustrated. Such number stories may be told by the teacher if she wishes to supplement the program. However, such unillustrated stories are entirely optional with the teacher, and are not outlined in this Teacher's Edition.

In the Grade One program contained in the pupil's book and Teacher's Edition, every suggested number story is told orally and either illustrated in the pupil's book, or dramatized in the classroom.

Seeing the Groups to Be Added

As stated earlier, the children will be given another opportunity to examine the subgroups which make up larger groups before they actually combine two groups by adding them. At this point the emphasis is upon the group arrangements which parallel the addition facts. These experiences with groups lead logically into addition and serve as an important step in developing readiness for learning the addition facts.

Learning a Vocabulary for Arithmetic

As was pointed out earlier, words are used in the addition and subtraction examples to indicate what the numbers represent. The words used for this purpose are all introduced through pictures. The introduction of vocabulary is controlled so that no more than three new words are used on any page. The words chosen for these situations are of the pre-primer and primer level of reading difficulty as determined by research. Once the words are introduced, they are used systematically, so that they become even more familiar to the child. Thus, *Making Sure of Arithmetic, Book One*, has a "built-in" vocabulary controlled within this book.

Thirty-six of the words used in the book are introduced in this section of 44 pages. Twenty-four of these words are nouns which are illustrated. The other twelve are the number words *one* to *six,* and six words needed for directions.

Learning about Numbers to 100 and Money to the Half Dollar

In this section of the book the numbers and the number system to 100 will be introduced. The experiences will include reading, writing, and counting to 100. The decades and the meaning of numbers will be emphasized through the use of concrete objects and pictured materials. The number words *one* to *six* will be introduced also.

The coins *quarter* and *half dollar* will be introduced, with emphasis upon recognition and the understanding of the relationship of one to the other.

Among other concepts introduced in this section of the book are telling time to the hour; the fraction *one-half;* and the terms of comparison *longer* and *shorter.*

The seventh "Making Sure" test is provided also. It tests the 15 addition facts which are introduced.

SEEING 2 AND 2 AND A GROUP OF 4

Preparatory Activities

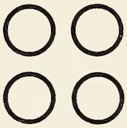
While learning about the numbers *1* to *10*, the children were given experiences in discovering the subgroups within larger groups. At first, in learning about *4* for example, they increased pictures of 1, 2, and 3 things, by drawing, so that there were 4 things in each picture. Later, they discovered all of the arrangements of two subgroups that were possible for the number *4*. These arrangements were: 2 and 2, 3 and 1, and 1 and 3. Similar experiences were provided for each of the other numbers to 10.

Experiences with groups are now suggested which emphasize the subgroups as they parallel the addition facts. The experiences are essential to understanding addition. At this time, only those subgroups that parallel a single addition fact or a pair of related facts will be studied together. For example, subgroups of 2 and 2 will now be examined in preparation for the addition fact 2 and 2 are 4, which will be introduced immediately. The other subgroups in 4 will be examined when other facts are introduced.

Using informal arrangements. The children should rediscover the subgroups 2 and 2 in informal arrangements which are realistic. These arrangements are often experienced in everyday situations. For example, there may be 2 plants in one window and 2 in another, or 2 chairs at one side of the table and 2 at another, or 2 goldfish in one fishbowl and 2 in another. The children may be asked to tell how many fish are in each bowl. Then they may tell how many fish there are in both bowls.

Using a patterned arrangement. Each child may make the subgroups on his desk with his counting objects. The teacher may give these directions:

Place 2 counters on the desk. Place 2 more below them. How many counters are on the desk?



Using Page 65

The children will probably notice that some of the monkeys are in the car and some are out of the car. The teacher may ask these questions:

How many monkeys are in the car? How many are out of the car? How many monkeys are there in the picture?

The children may read the direction, "Tell how many," and write in the blank the number which tells how many monkeys there are in the picture.

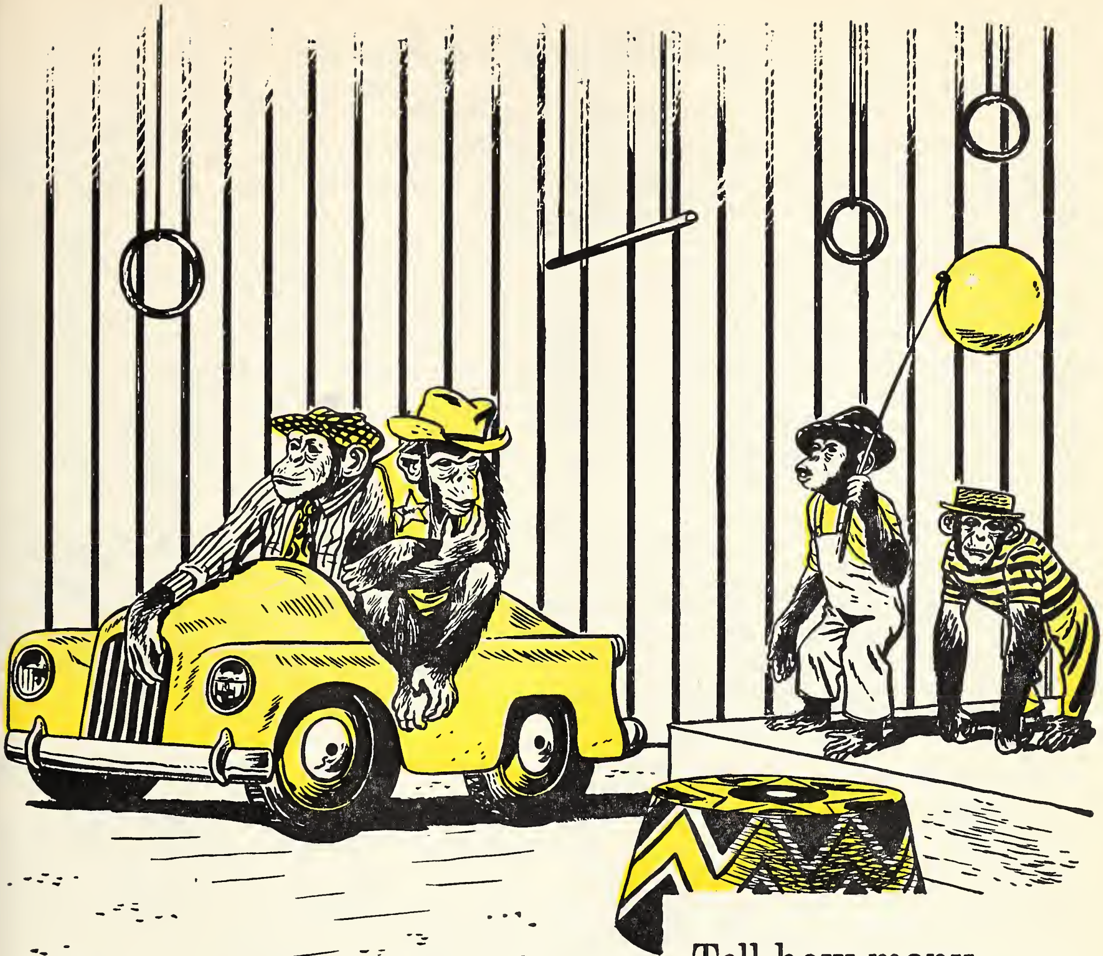
The children probably know the words *draw* and *ball*. If not, the teacher may help them read the words, since they will be used many times from now on.

Have the children read the direction, "Draw 2 balls." Then have them trace the 2 balls in the box. Have them read the second direction, and trace the next 2 balls. Help them locate the black line at the right of the box. Have them write on this line the number that tells how many balls they drew.

Follow-up Activities

Additional learning helps. All of the children should be able to do the exercises on this page because they have had so many similar experiences. However, some children may need help with the two directions, "Tell how many" and "Draw 2 balls." If that is the case, they should learn now what they mean, since both directions will be used frequently.

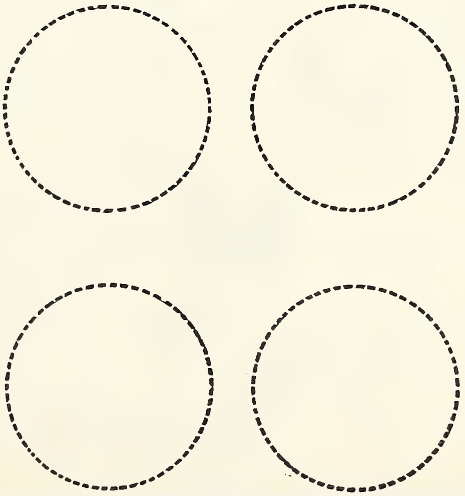
Enrichment activities. If the children did not make cards with pictures of the groups before, they may wish to start a set now. (See page 114.) They may choose the kind of pictures they wish to make.



Tell how many. ____

Draw 2 balls.

Draw 2 balls.



____

LEARNING WHAT ADDITION IS

Preparatory Activities

The children are now ready to learn what addition is, and to discover the addition fact 2 and 2 are 4. Page 66 provides material for these experiences.

Using dramatization. The meaning of addition can be demonstrated to the children through the use of dramatization. The teacher may tell this number story for the children to dramatize:

Two girls were playing house. Two more girls came to play. How many girls were playing then?

After the children play the story, the teacher may ask, "How many are 2 girls and 2 girls?" The 4 girls who dramatized the story may be arranged in groups of 2 and 2. Then they may move together as the teacher says, "2 girls and 2 girls are 4 girls."

Then a story may be told which the children will only partially dramatize. For example:

Two boys were playing marbles. Two more boys came. How many boys were playing then?

Have the 2 boys playing and 2 boys coming to play. But stop the dramatization before the groups join. Then ask, "How many boys will be playing when the 2 boys get into the game? How many are 2 boys and 2 boys?"

Let the children "think" the groups together and state the addition fact.

Using concrete objects. Each of the children may discover the addition fact with his counting objects, following these directions:

Put 2 counters on the desk. Put 2 more counters below them. How many counters will there be when you put both groups together? How many are 2 counters and 2 counters?

Then write the example on the blackboard, with pictures to illustrate the two groups to be added, as shown here. Let a child write the answer.

2
2
___ blocks

A definition of addition may be given at this time. The teacher may explain that when we put together things that are alike and find how many there are, we add. We call this addition.

Using Page 66

Tell the children that the two pictures at the top of the page tell a number story. One picture shows one group joining another group. The next picture shows how many there are in the two groups together. Have the children study the pictures as this story is told:

One day 2 lambs were in the pasture. Two more lambs came. How many lambs were in the pasture then?

Help the children see that the first picture illustrates the story and the second shows the answer to the question. Have them answer the question orally. Then call attention to the small pictures. Help the children read the addition fact in this way, "2 lambs and 2 lambs are 4 lambs."

Have them write the *4* in the blank.

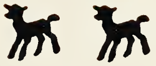
The children may study the next picture while the teacher tells this story:

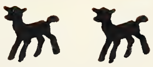
Two hens were on their nests. Two more hens came to get on their nests. How many hens were on nests then?

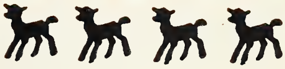
Have the children read the question and say the answer. Then have them trace the numbers in the example and write the answer.

Follow-up Activities

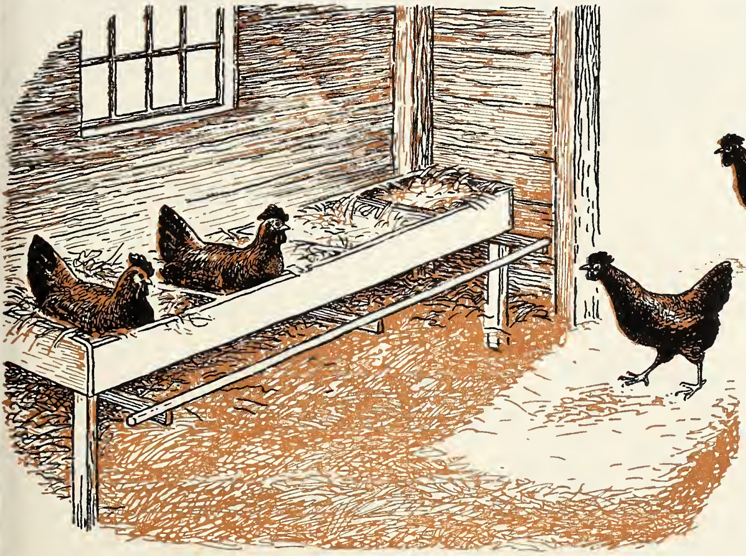
Additional learning helps. If any children need more help, they should be given more experiences with dramatization and with concrete objects.



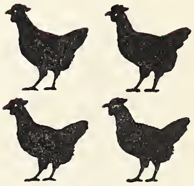




2 and 2 are ____



2
2



____

How many are 2 hens and 2 hens?

____ hens

SEEING 1 AND 1 AND A GROUP OF 2

Preparatory Activities

Page 67 provides another look at a group of 2, and helps the pupils see this group as being made up of 1 and 1, in readiness for the new addition fact, 1 and 1 are 2.

Using informal arrangements. Classroom activities may be used to call attention to the 2 single objects in a group of 2. For example, a boy and a girl may be working at a desk or 1 girl may be carrying books to the reading table and 1 girl may be arranging them. Perhaps there is 1 large picture and 1 small picture on the bulletin board. The teacher may call attention to such an arrangement by asking these questions:

How many large pictures are on the bulletin board? How many small pictures are there? How many pictures are on the bulletin board?

Using patterned arrangements. The children may use their counting objects to make a group of 2, following these directions:

Place 1 counter on the desk. Place 1 more counter below it. How many counters are on the desk?

Using Page 67

Help the children identify the animals in the picture. Then ask:

How many giraffes are in the circus car? How many are out of the car? How many giraffes are there in the picture?

Have the children read the sentence and write the number in the blank.

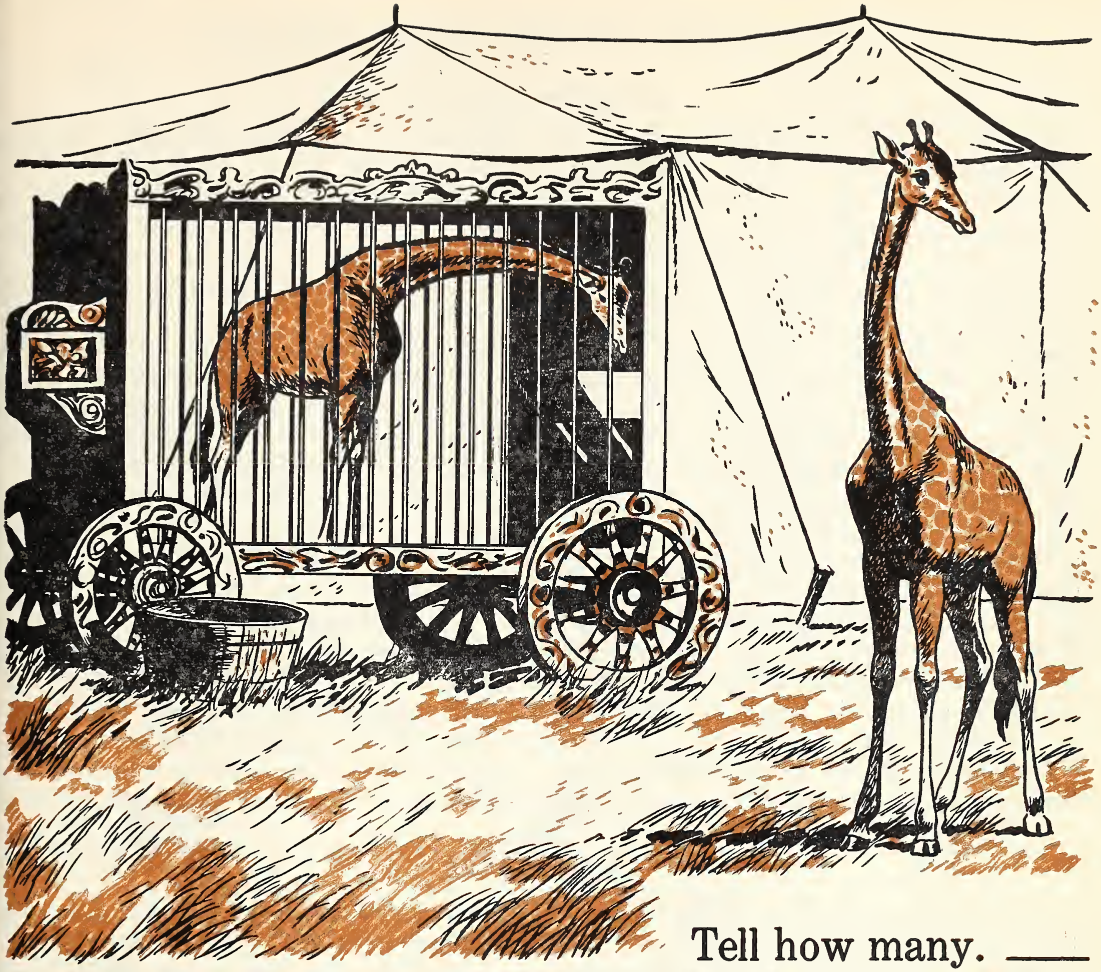
In exercises such as the one at the bottom of the page, which occur frequently in this section, it is important that the children learn to read the first direction and follow it. Then they may read the next direction and follow it. In this way they draw one subgroup, then the next subgroup, and see the two subgroups that make up the larger group in the arrangement intended.

In this exercise the children read the first direction and trace 1 ball. Then they read the second direction and trace 1 more ball. They should be told to write on the black line at the right of the colored box the number that tells how many balls they drew.

Follow-up Activities

It is not likely that any of the children need additional help with this group arrangement. If some of the children wish to do so, they may make a card, illustrated perhaps with 1 wagon above and 1 wagon below, to show the arrangement.

Notes



Tell how many. ___

Draw 1 ball.

Draw 1 ball.

___

LEARNING ANOTHER ADDITION FACT

Preparatory Activities

Page 67 provided readiness for the addition fact 1 and 1 are 2. This fact is introduced on page 68.

Using dramatization. The children may be helped to visualize the addition process and discover the addition fact through the dramatization of a number story. To understand the addition process fully, the children need to see two groups combined to make a larger group. When the larger group has been formed, the children should retain their awareness of the smaller groups that were put together to make up the larger group. It is well to use children, rather than books or chairs, to demonstrate the addition facts in early classroom experiences with addition, since children have identity. Even after two groups of children have been combined, the two original groups can still be clearly seen as the two parts of the larger group.

This story may be dramatized:

One patrol boy was helping children cross the street. One more patrol boy came to help. How many patrol boys were helping the children then?

The boys who played the story may be used to demonstrate the answer to this question:

How many are 1 patrol boy and 1 patrol boy?

Then the following story may be dramatized; but this time the dramatization should be stopped before the action of coming together is completed, so that the children can think what the answer will be.

One nurse was working in the hospital. One more nurse came to help. How many nurses were working then? How many are 1 nurse and 1 nurse?

Using concrete objects. The children may follow these directions, using their counting objects:

Place 1 counter on your desk. Place 1 more counter below it. Now put the counters together. How many are 1 counter and 1 counter?

Using Page 68

The teacher may tell this number story for the pictures at the top of page 68:

There was 1 old owl in a tree. One more owl came. How many owls were in the tree then?

Help the children read the illustrated fact below the picture in this way: "1 owl and 1 owl are 2 owls." Then have them write the 2 in the blank.

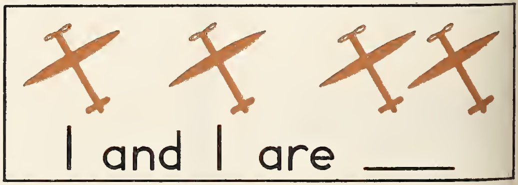
The children may then study the picture at the foot of the page while the teacher tells this story:

One kitten was playing with a ball of yarn. One more kitten came. How many kittens were playing with the yarn then?

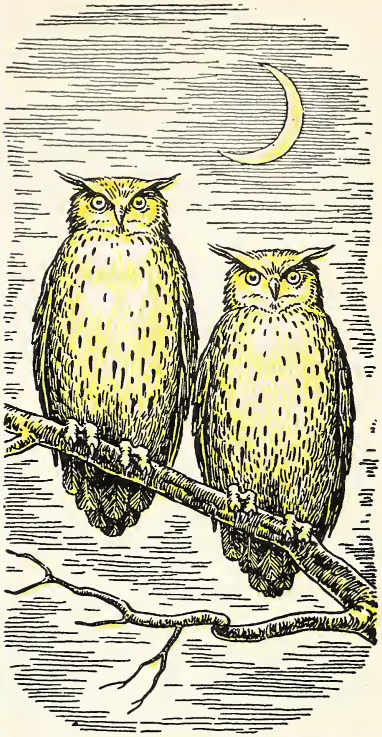
Have the children read the question and answer it. Then have them trace the numbers in the illustrated example and write the answer. Have them read the fact, "1 kitten and 1 kitten are 2 kittens."

Follow-up Activities

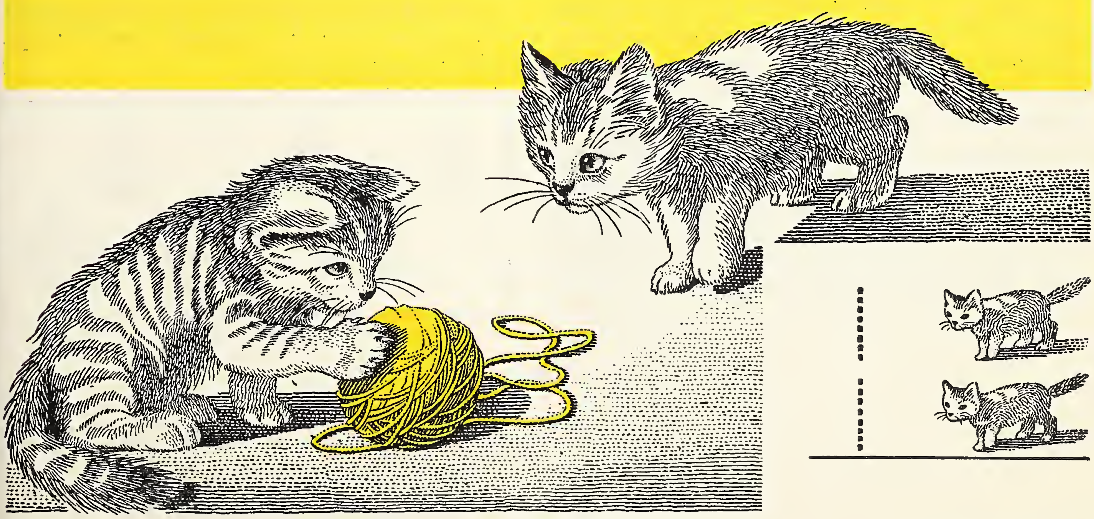
Additional learning helps. Any children who need further help may be given more stories to dramatize similar to those suggested as preparatory activities. Then they may use their counting objects to illustrate the fact. They may make cards for the fact like the one shown in the next column. Before they do so, models of the words *and* and *are* may be written on the blackboard.



Enrichment activities. The faster learners may make illustrated cards also.



1 and 1 are ____



How many are 1 kitten and 1 kitten? ____ kittens

SEEING 2 AND 1 AND A GROUP OF 3

Preparatory Activities

In readiness for the introduction of two new addition facts, the exercises on page 69 provide experiences with groups of 3 which show the subgroup arrangements 2 and 1, and 1 and 2.

Using informal arrangements. These activities are suggested:

Arrange at the front of the room 2 boys and 1 girl at a table, and 1 boy and 2 girls at the blackboard. Ask:

How many boys are at the table? How many girls are at the table? How many children are at the table?

How many boys are at the blackboard? How many girls are at the blackboard? How many children are at the blackboard?

Using patterned arrangements. The children may use their counting objects to build the groups at their desks. The teacher may direct them as follows:

Put 2 counters on the desk. Put 1 more counter below them. How many counters are on the desk now?

Put 1 counter on the desk. Put 2 more counters below it. How many counters are there in this group?

Using Page 69

Let the children discuss the elephants in the water. Then ask these questions:

In the picture at the top of the page, how many elephants are in the water? How many are out of the water? How many elephants are there in this picture?

Have the children read the sentence and write the answer in the blank.

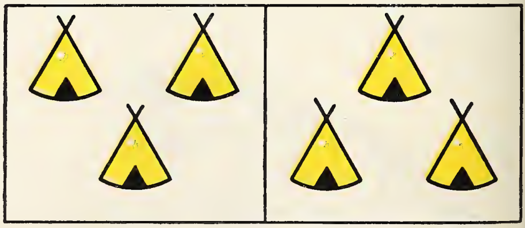
Repeat the questions for the next picture, and have the children write the total number.

In the next exercise the children trace balls as directed, except that in the second part of the exercise they will draw 2 balls without the aid of models to be traced. This is a step in the plan for gradual development of independence in following directions. Be sure that in each part of this exercise the children write on the black line at the right of each colored box the total number of balls they traced or drew.

Follow-up Activities

Additional learning helps. If help in following printed directions is needed by some children, the teacher may make pictures of several groups of toys, animals, etc., on the blackboard, and write below each picture the sentence, "Tell how many." The children may be helped to understand the direction. Then they may write the number that tells how many things there are in each picture. A similar procedure may be used with the direction for drawing balls.

Enrichment activities. The faster learners may make cards to illustrate two arrangements of a group of 3.



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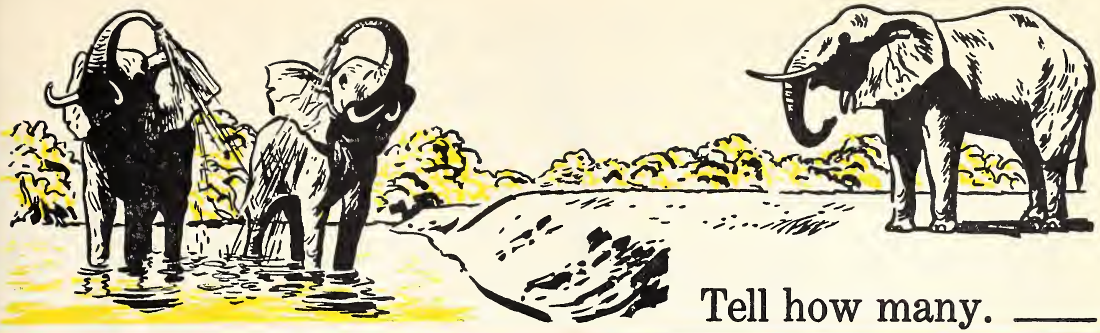
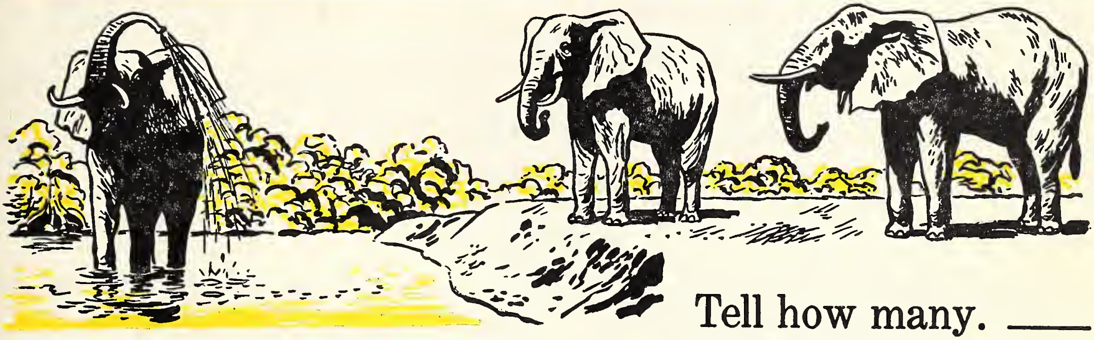
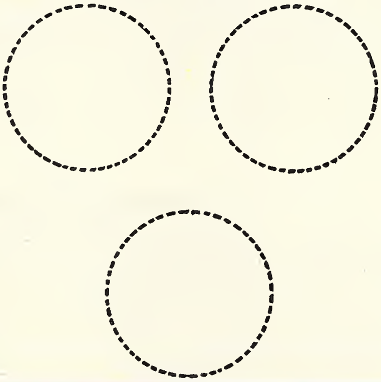


Tell how many. ____



Tell how many. ____

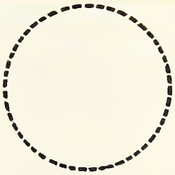
Draw 2 balls.



Draw 1 ball.

____

Draw 1 ball.



Draw 2 balls.

____

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

The addition facts 2 and 1 are 3, and 1 and 2 are 3, are introduced on page 70 through action pictures which illustrate oral number stories.

Using dramatization. Actual classroom activities may serve as sources for stories, or the children may dramatize these stories:

Two boys were making a toy farm. One more boy came to help. How many boys were making the farm then? How many are 2 boys and 1 boy?

One girl was sewing for dolls. Two more girls came to sew. Then how many girls were sewing? How many are 1 girl and 2 girls?

Using concrete objects. The children may discover the two addition facts with their counting objects. They should build each fact separately at their desks. The teacher may give the following directions as the pupils use their counters:

Put 2 counters on the desk. Put 1 more counter below them. Put the counters together. How many are 2 counters and 1 counter?

Put 1 counter on the desk. Put 2 more counters below it. Put the counters together. How many are 1 counter and 2 counters?

Using Page 70

Help the children identify the penguins. Then tell this story about the pictures:

One day 2 penguins were on the shore. One more penguin came to join them. How many penguins were on the shore then?

Have the children read the fact, "2 penguins and 1 penguin are 3 penguins," and write the 3 in the blank.

Follow the same procedure for the next exercise. This story may be told:

One wild duck was on the shore. Then 2 more wild ducks swam to shore. How many wild ducks were on the shore in all?

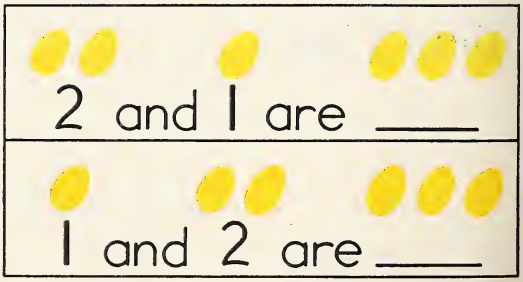
Have the children read the fact, "1 duck and 2 ducks are 3 ducks," and write the 3 in the blank.

Follow-up Activities

Additional learning helps. If some of the children did not seem to understand the new addition facts, or if the teacher believes they will need more help in learning them, they may be given other number stories to dramatize. It may be that among the pictures cut from magazines there are some that could be used as sources for number stories to dramatize. Perhaps the children can be helped to tell their own stories, using the new facts.

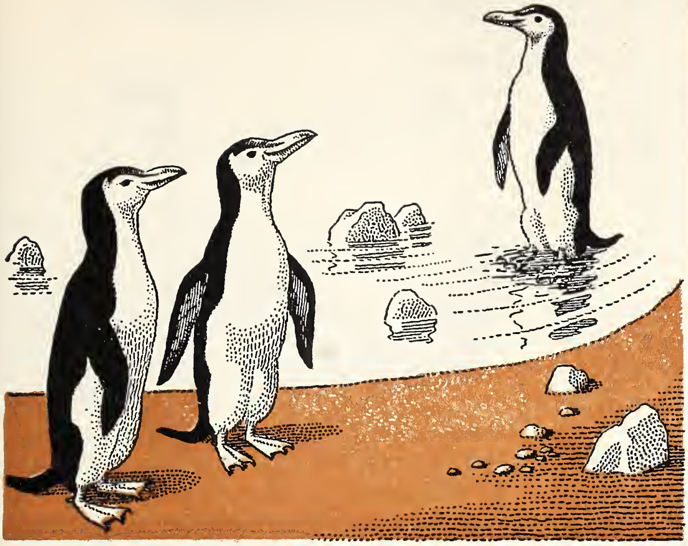
The children may build the facts again with their counting objects. This manipulative activity frequently enables children to visualize the facts more effectively than do other activities.

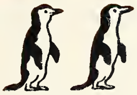
The children may find it helpful to illustrate the new facts in the form shown in their books. They may make cards like those shown in the next column.



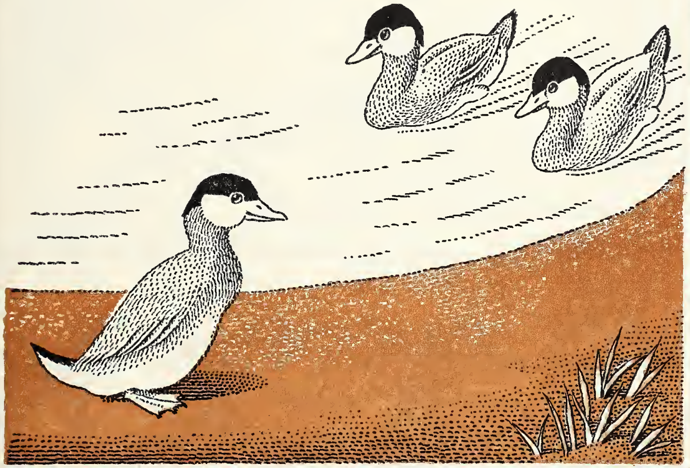
Enrichment activities. The children who do not need help at this time may be able to find pictures in magazines that tell a number story about the new facts. These may be cut out and pasted on paper, and be used to illustrate oral number stories.

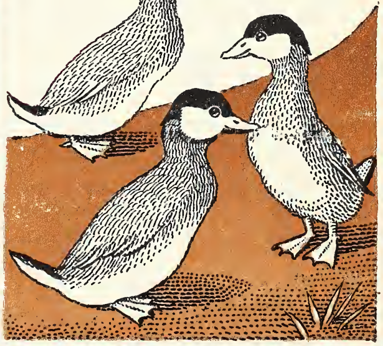
Some of these children may be interested in making pictures to illustrate the new facts for their folders or scrapbooks. They may use the horizontal form suggested above.





2 and 1 are ____





1 and 2 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

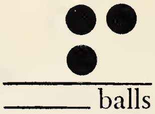
Page 71 provides experiences in using in oral number stories the facts introduced on page 70, in writing these facts in example form, and in completing examples that use all four addition facts so far introduced.

Using dramatization. At this time number stories that use the new facts may be partially dramatized. In the story below, the dramatization should be stopped just before the 1 ball is placed on the table, so that the children must think what the result will be when the action is completed.

Jane put 2 balls on the teacher's desk. Mary put 1 more ball on the desk. How many balls were on the desk then?

The teacher may write this question and draw this picture on the blackboard:

How many are 2 balls and 1 ball?



The children may answer the question. Then they may be helped to write the numbers in the example beside the pictures of the balls.

The children may be helped to see that we write the numbers in the example in the order in which they occur in the number story.

Then the same procedure may be followed for this story:

Ted put 1 book on the table. Bill put 2 more books on the table. How many books were on the table then?

Using Page 71

Tell the children this story as they study the picture:

One day 2 ducks were swimming on the pond. One more duck came to swim. How many ducks were swimming in all?

Have the children read the question and say the answer. Then have them trace the numbers in the example and write the answer.

Follow the same procedure for the next picture. This story may be told:

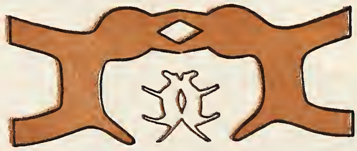
One pig went into a pig house. Then 2 more pigs went into the house. How many pigs were in the pig house in all?

Call attention to the row of illustrated examples at the bottom of the page. Help the children read them: "1 pony and 1 pony are how many ponies?" "1 kitten and 2 kittens are how many kittens?" etc. They may be told to think how many there are in all and then write the answer. Explain again that when we think how many 1 pony and 1 pony are, we are adding.

Follow-up Activities

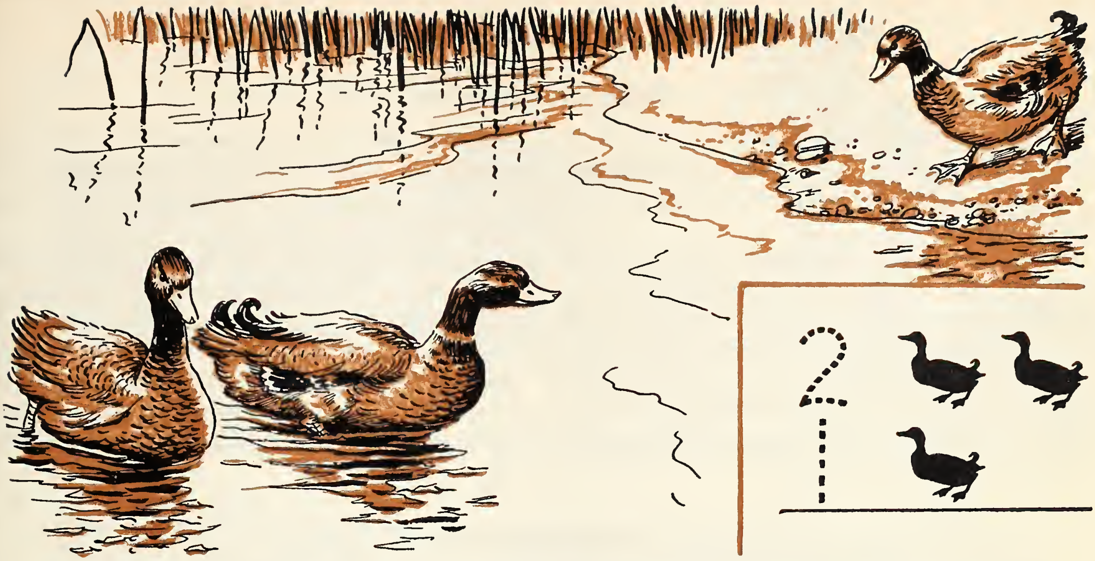
Additional learning helps. If there are any children who had difficulty with the exercises on this page, the teacher will wish to work with them to overcome the difficulties. A careful examination of the work will reveal the cause of difficulty.

It may be that some children have not developed the concept of addition. Dramatization may be used again to help these children. For example, cut-outs of the animals named in the stories may be made from folded paper. Then the children may play the stories to find the answers. The cut-outs may be very simple, such as those suggested here. If the teacher wishes, she may obtain small plastic animals at nominal cost.

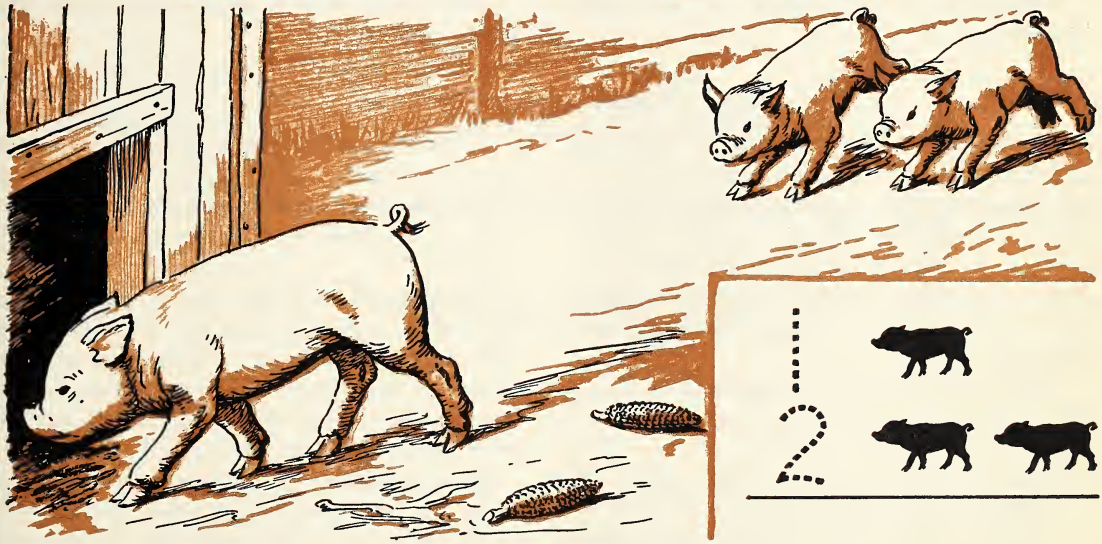


The children who had difficulty with the facts may study the fact cards they made. (See page 158.)

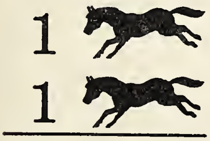
Enrichment activities. The children who do not need help at this time may wish to make up number stories.

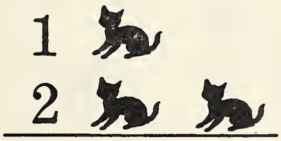


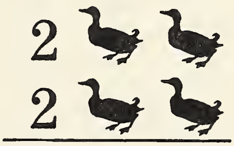
How many are 2 ducks and 1 duck? ____ ducks

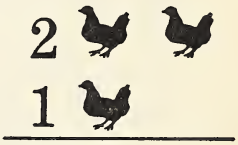


How many are 1 pig and 2 pigs? ____ pigs









____ ponies ____ kittens ____ ducks ____ hens

TERMS OF COMPARISON: *LONGER* AND *SHORTER*

Preparatory Activities

The terms *longer* and *shorter* may be added to the child's oral vocabulary at this time. An exercise for this purpose is provided on page 72.

Using realistic experiences. The teacher may be able to use regular classroom activities to develop the concepts of *longer* and *shorter*. For example, the children may need a longer string for the curtains in the doll house or a shorter piece of wood for the boat they are making. There may be a longer and a shorter table in the room.

Using concrete experiences. After the terms are introduced and the concepts developed, an exercise such as the following may be given:

The teacher may ask the children to tell the color of the longer of two pencils; bring the shorter of two rulers from the table; find a shorter paint brush than the one indicated; make a longer line than the one drawn on the blackboard; make a picture of a shorter rope than the rope that has been drawn on the blackboard.

Using Page 72

Have the children put an X by the longer of the two puppies.

Have them put a √ on the shorter of the two trains.

Have them draw a longer stick of candy than the candy stick shown.

Have them draw a shorter arrow than the arrow shown.

Follow-up Activities

Additional learning helps. If some of the children are uncertain about the terms *longer* and *shorter*, they may be given more experiences in pointing out the longer and the shorter of various things in the classroom, such as: a longer and a shorter box, a longer and a shorter wire, a longer and a shorter piece of cord.

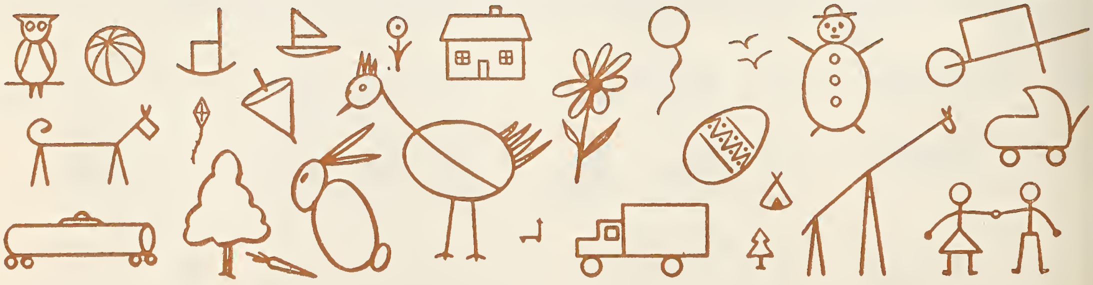
Then they may work in pairs to make on the blackboard such pictures as the following:

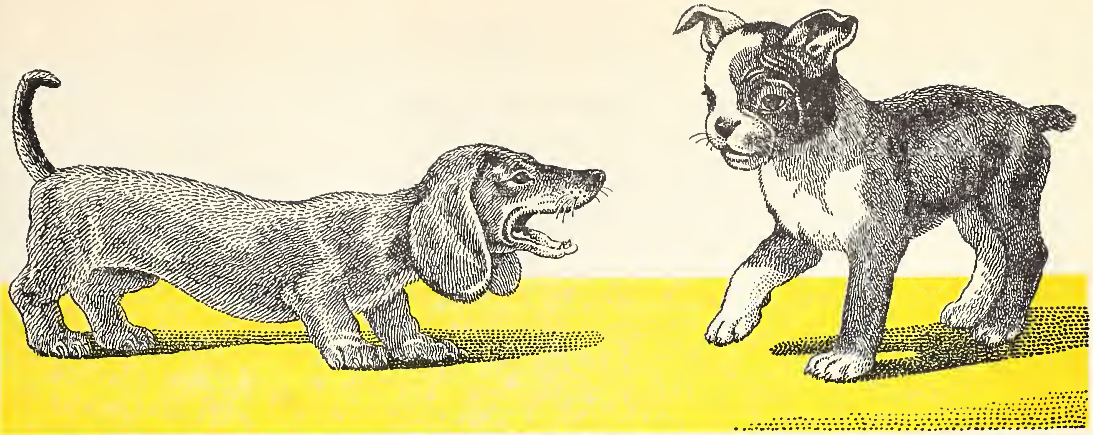
a longer fish than the one John made
a shorter boat than the one Sue made
a longer wagon and a shorter wagon than the one Fred made

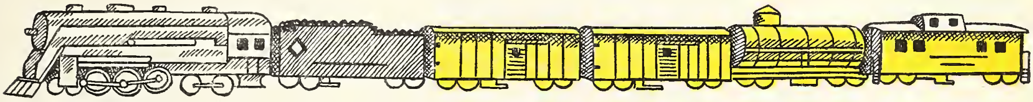
The children may then be helped to correct the mistakes they made in their books. It is important that each exercise be done correctly before the children go to the next page.

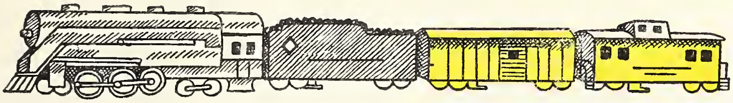
Enrichment activities. The faster learners may make pictures for their scrapbooks or folders to show what *longer* and *shorter* mean. If they prefer, they may find in magazines pictures that show two things, one of which is longer than the other.

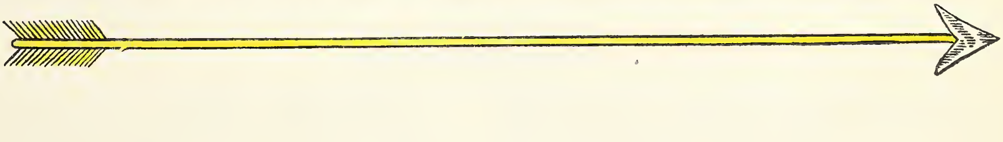
Drawing pictures. The children will often need to draw simple objects. The objects below may be used from time to time as sources of model drawings.











SEEING 3 AND 1 AND A GROUP OF 4

Preparatory Activities

The exercise on page 73 provides another series of experiences with a group of 4, in readiness for the introduction of the addition facts 3 and 1 are 4, and 1 and 3 are 4 on the next page.

Using informal arrangements. The teacher may arrange, in the front of the room, 3 chairs in a group at the left and 1 chair alone at the right. The children may answer these questions:

How many chairs are at the left? How many chairs are at the right? How many chairs are there?

The chairs may be rearranged so that 1 large chair is at the left and 3 small chairs are at the right. Then the children may answer these questions:

How many large chairs are there? How many small chairs are there? How many chairs are there in all?

There may be informal arrangements in the room which can be called to the attention of the children to help them discover a group of 3 objects, 1 single object, and the larger group of 4. For example, there may be 3 girls and 1 boy working together, or 3 boxes of crayons and 1 box of chalk on a shelf, or 1 large toy and 3 smaller toys on a window ledge or on a table. Several such group arrangements may be pointed out.

Using patterned arrangements. The teacher may direct the children to make groups of 4 on their desks with their counting objects in this way:

Place 3 counters on the desk. Place 1 more counter below them. How many counters are on the desk?

Place 1 counter on the desk. Place 3 more counters below it. How many counters are there in this group?

Using Page 73

Let the children discover that in each picture some of the cars are in the box and some are out of the box. Then ask these questions about the first picture:

How many cars are in the box? How many are out of the box? How many cars are there in this picture?

Help the children read the direction. Explain that it means to tell how many cars there are in the picture. Have them write the number.

For the second picture, repeat the questions asked before in the same order, and have the children write the number that tells how many cars there are in the picture.

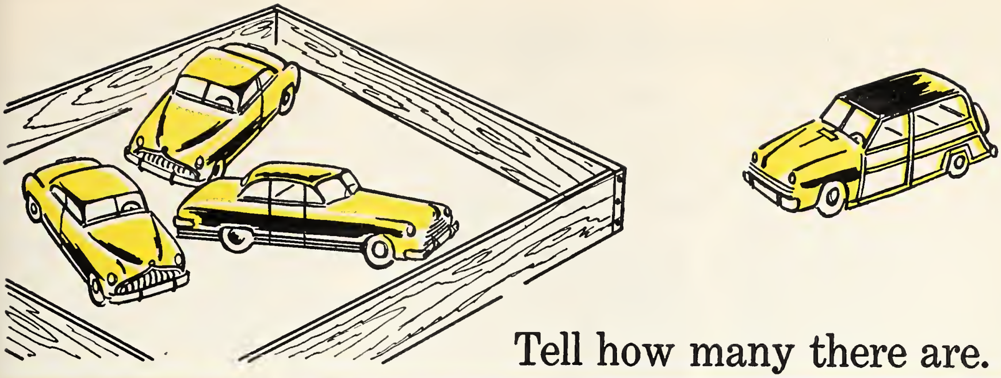
In the first part of the next exercise, have the children read each direction, trace the balls, and write on the line provided at the right the total number of balls they traced. In the second part, have them draw 1 ball and then 3 balls, as they are told, and write the total number of balls they drew.

The teacher should supervise this exercise very carefully to make sure that each child understands what he is to do, and that he makes the balls small enough so that they will fit into the space provided. The exercises of this type which will be presented in the rest of this section will all follow a plan similar to the one used on this page.

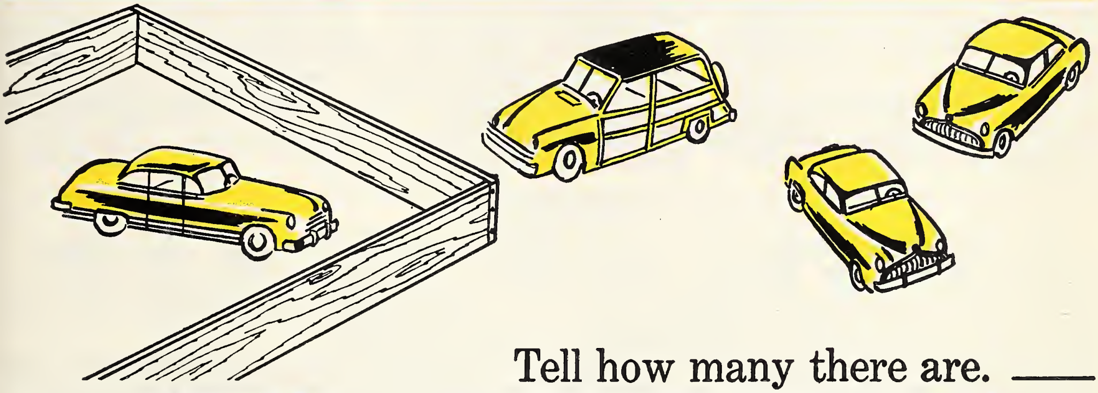
Follow-up Activities

Additional learning helps. If, as she examines their work, the teacher finds that some of the children need more help, she may give them more experiences with concrete objects. Then she may help them read the exercises in their books again and correct their mistakes.

Enrichment activities. If some of the faster learners are making a set of cards with pictures to show the group arrangements, they may make cards for arrangements of 3 and 1, and 1 and 3, similar to those shown on page 156. The children may draw toy horns, or use other ideas. (See page 162.)



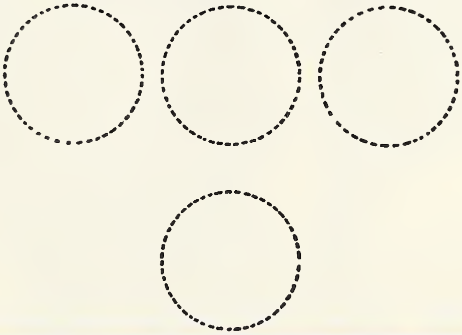
Tell how many there are. ____



Tell how many there are. ____

Draw 3 balls.

Draw 1 ball.



____

Draw 1 ball.

Draw 3 balls.

____

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

The addition facts 3 and 1 are 4, and 1 and 3 are 4, are introduced on page 74 through action pictures which illustrate oral number stories.

Using dramatization. Actual classroom situations may be used as the source for number stories to be dramatized, or the children may dramatize these stories:

Ellen had 3 storybook dolls. Her aunt gave Ellen 1 more doll. How many dolls did she have then? How many are 3 dolls and 1 doll?

Fred had 1 airplane in his hangar. He put 3 more airplanes in the hangar. How many airplanes were in the hangar then? How many are 1 airplane and 3 airplanes?

The facts may be demonstrated with toys.

Using concrete objects. The children may build the new facts with their counters as the teacher gives these directions:

Place 3 counters on the desk. Place 1 more counter below them. Put the counters together. How many are 3 counters and 1 counter?

Place 1 counter on the desk. Place 3 more counters below it. Put the counters together. How many are 1 counter and 3 counters?

Using Page 74

Help the children identify the cowboys and the coyotes in the pictures. Tell the children that the pictures at the top of the page show what happens in this number story:

One night 3 cowboys were playing and singing around a campfire. One more cowboy came to join them. How many cowboys were playing and singing then?

Have the children answer the question orally, and help the children read the fact, "3 cowboys and 1 cowboy are 4 cowboys." Then have them write the *4* in the blank.

Tell this story as the children study the next two pictures.

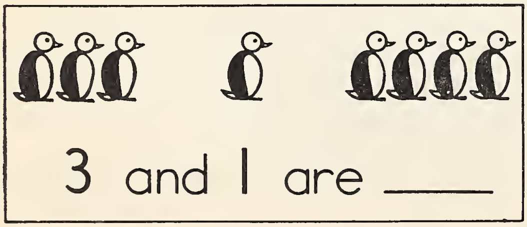
That night 1 coyote heard the music and began to howl. Then 3 more coyotes came. How many coyotes were howling then?

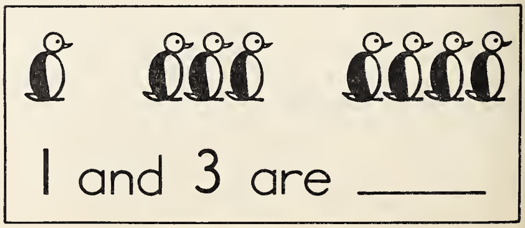
Have the children answer the question orally, read the fact, "1 coyote and 3 coyotes are 4 coyotes," and write the answer, *4*, in the blank.

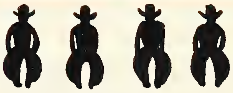
Follow-up Activities

Additional learning helps. If some of the slower learners need more help in learning the new facts, they may be helped to tell stories that use the facts. Then they may dramatize the stories they told, or make pictures for them. The children should build the facts again with their counting objects. Then they may make illustrated cards such as those shown below:

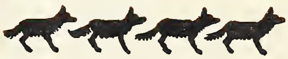
Enrichment activities. The faster learners may make pictures to illustrate the new facts for their arithmetic scrapbooks. If a set of animals has been cut from folded paper, or if plastic toy animals are available, some of the children may make up number stories and use the animals to dramatize them. They may also enjoy playing store or bank with the toy money.


3 and 1 are ____


1 and 3 are ____



3 and 1 are ____



1 and 3 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The new addition facts are used in number stories and examples on page 75. The transition is made from examples in which pictures show what the numbers mean to examples with words instead of pictures.

Using dramatization. These number stories, or similar ones, may be dramatized. The dramatizations should be stopped before the groups are brought together and the answer shown.

Helen put 3 of her kittens in a basket. One more kitten climbed in. How many kittens were in the basket then? How many are 3 kittens and 1 kitten?

Tom put 1 of his toy ponies in the barn. Then he put 3 more ponies in the barn. How many ponies were in the barn in all? How many are 1 pony and 3 ponies?

Following the dramatization, the examples may be written on the blackboard and illustrated with line drawings. Then they may be written again with words. For example:

3
1
__ kittens

3 kittens
1 kitten
__ kittens

The children may be helped to see that words, as well as pictures, can tell us what the numbers represent.

Using Page 75

Tell this story while the children study the picture at the top of the page:

One day 3 boys were playing cowboy. One more boy came to play. How many boys were playing cowboy then?

Have the children read the question and answer it. Then have them trace the numbers in the example and write the answer.

Tell this story for the next picture:

One cow came into the corral. Three more cows came in. Then how many cows were in the corral?

Have the children read the question, trace the numbers in the example, and write the answer.

In the exercises at the foot of the page, have the children read the first example in this way: "2 kittens and 1 kitten are how many kittens?"

Then have them read the example with words in the same way: "2 kittens and 1 kitten are how many kittens?"

Explain that the numbers and words mean the same as the numbers and pictures. Then let the children write the answers for all of the examples.

Follow-up Activities

Additional learning helps. If some of the children seem to need more help with the examples with numbers and words, write these examples on the blackboard.

2 kittens	1 pig	3 hens	1 dog
1 kitten	3 pigs	1 hen	2 dogs
__ kittens	__ pigs	__ hens	__ dogs

Let the children explain what each item above the line in the first example means. Then ask, "How many are 2 kittens and 1 kitten?" If the children cannot answer, let them make pictures for the example and then write the answer. Continue in this way with the other examples.

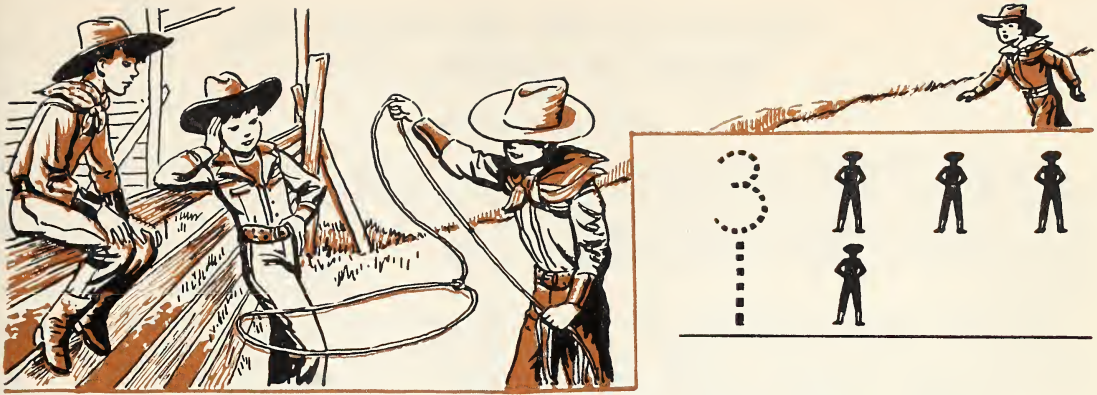
Enrichment activities. The faster learners may make study and practice cards such as these for the new facts:

Front

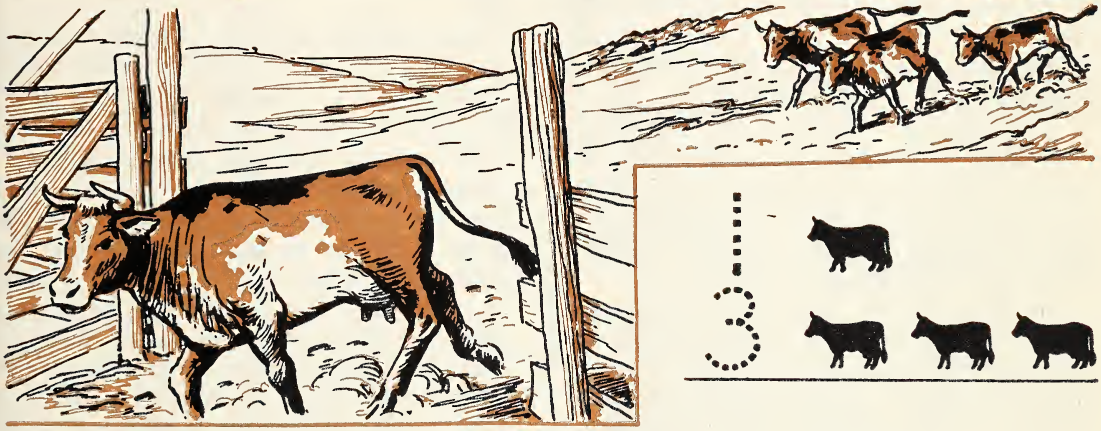
3 ponies
1 pony
— ponies

Back

3
1
4 ponies



How many are 3 boys and 1 boy? ____ boys



How many are 1 cow and 3 cows? ____ cows

2 🐈 🐈
1 🐈
____kittens

2 kittens
1 kitten
____kittens

1 🐖
3 🐖 🐖 🐖
____pigs

1 pig
3 pigs
____pigs

3 🐔 🐔 🐔
1 🐔
____hens

3 hens
1 hen
____hens

1 🐕
2 🐕 🐕
____dogs

1 dog
2 dogs
____dogs

COUNTING BY ONES AND TENS TO 50; READING THE NUMBERS 1 TO 50

Preparatory Activities

The children may be taught rational counting to 50 by ones and tens at this time. Then they may learn to read the numbers to 50. Exercises for this purpose are provided on page 76.

Providing concrete experiences. In introducing the number names to *fifty,* and in teaching rational counting, realistic experiences should be used. There may be a need to count the children to find how many plan to attend a school play or to find how many are present. There may be a need to count the rulers, scissors, etc., to find if there are enough for all of the children.

In extending counting to 50, it is well to count first to 10, then to 20, then to 30, and so on. This serves two purposes. It develops the decade concept and also permits the children to see that if they can count to 20, counting to 30, to 40, and to 50 is easy.

Making a number chart. Two large pieces of paper ruled with 2-inch squares should be on hand for this exercise. A box of 1-inch counting cubes or squares of cardboard should be available also. Have a child place cubes in a column of ten as he counts to 10. Then another column of ten may be placed beside the first as another child counts to 20, a third column as another child counts to 30, etc.

Have the children help make a chart on the square-ruled paper. A child may draw 10 apples, oranges, balls, or triangles in a column of ten squares as he counts to 10. The next child may make pictures as he counts down the column to 20, and so on, to 50.

The children may place counting objects in columns of ten on their desks as they count to 50. The teacher may move about listening for poor enunciation and incorrect pronunciation, and giving needed help.

Following this, the teacher may write the numbers *1* to *50* on the second piece of ruled paper while the children do rote counting. Then she may call attention to the decades and to the fact that all of the numbers ending with zero are across the bottom of the chart. The children may count the columns of pictures on the illustrated chart by tens. Then they may read the numbers, first, column by column, and then consecutively from 1 to 50.

Using Page 76

Have the children count the first column of gingerbread men. Let them discover that there are 10 men in each column. They may count them by tens and by ones.

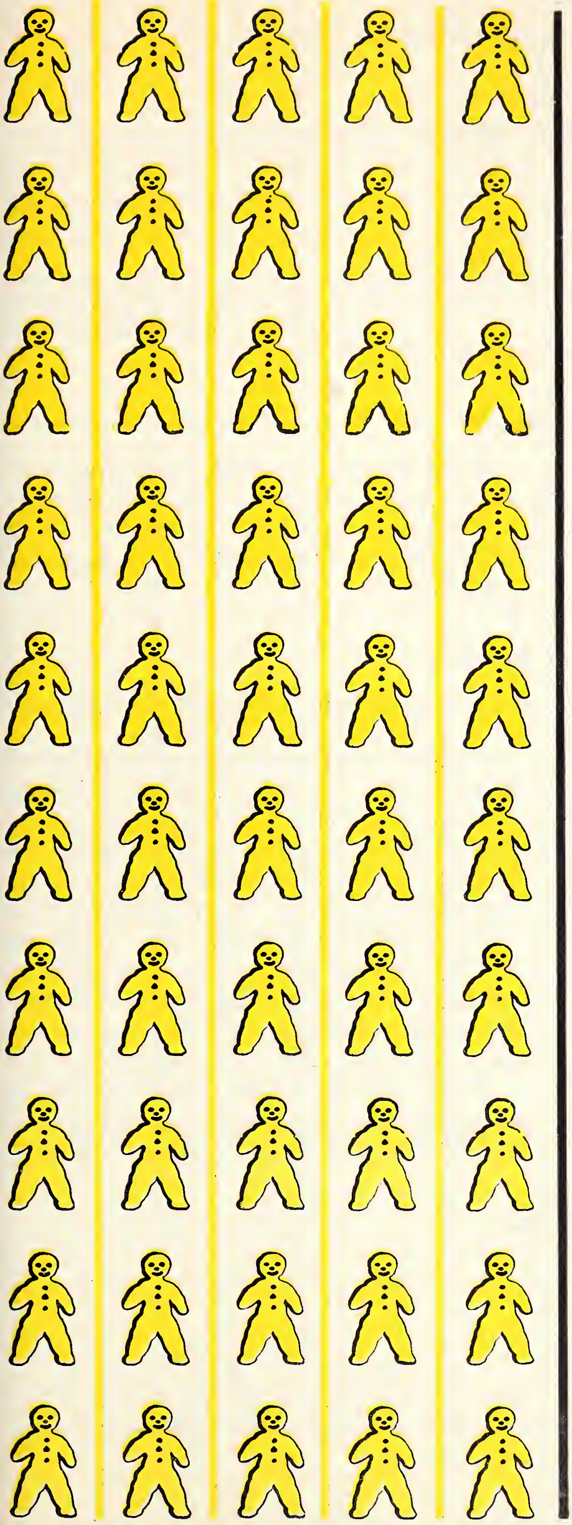
The children may read the chart, one decade at a time. Then they may read all the numbers ending in *5*, in *0*, etc. Then they may read the number that comes before and the number that comes after a certain number, such as *36*.

Follow-up Activities

Additional learning helps. Any children who need help with counting should work with concrete objects and the number charts. It often helps to concentrate upon the end of one decade and the beginning of the next: 9, 10, 11; 19, 20, 21; etc.

It may help the children who had trouble with enunciation and pronunciation if the teacher will say the numbers clearly while each child listens and watches her lips. It is sometimes necessary to show the child how to place the lips or tongue and how to say the words distinctly. When the child hears each syllable clearly, he usually can say the words correctly.

Enrichment activities. The faster learners may wish to make number charts with pictures for their scrapbooks. They should use square-ruled paper and make simple drawings.



1	11	21	31	41
2	12	22	32	42
3	13	23	33	43
4	14	24	34	44
5	15	25	35	45
6	16	26	36	46
7	17	27	37	47
8	18	28	38	48
9	19	29	39	49
10	20	30	40	50

LEARNING TO WRITE THE NUMBERS TO 50

Preparatory Activities

Having learned to read the numbers to 50 and to count to 50 by ones and tens, the children may learn to write the numbers to 50 Exercises for this purpose are provided on page 77.

Using the blackboard. The first experiences with writing the numbers to 50 may take place at the blackboard, with several children writing the numbers in columns of ten. Models of *1, 10, 11, 20, 21, 30, 31, 40, 41,* and *50* may be provided to help the children see where the columns begin and where they end.

The children who remain at their desks will be able to observe, and help find mistakes if any are made.

Using Page 77

Call attention to the dotted models in the first chart. These are to be traced as the children come to them while writing the numbers to 50. Have the children begin with *1* and write down the column to *10,* and so on.

Have the children write the numbers that are missing in the two columns at the right.

Then have them write the numbers *10, 20, 30, 40, 50* across the bottom of the page, and read them.

Follow-up Activities

Additional learning helps. The teacher will wish to work again at the blackboard with any children who cannot make the symbols legibly and correctly. These children may be given models of the symbols that are difficult for them. The models may be traced several times after the child knows where to begin and understands just how the models are to be traced. The teacher will take into account the physical maturity of the child, so that he will not be asked to spend too long a time practising.

If there are any children who need help with rational counting, they may be given experiences in counting concrete objects. It will be a good plan to motivate the counting by giving them things that really need to be counted for a useful purpose.

Children who need help in reading the numbers may profit by working with numbered cards. Fifty 1-inch squares of cardboard will be needed for the cards. The children will write the numbers 1 to 10 on the first ten cards, 11 to 20 on the next ten, 21 to 30 on the next ten, etc. When the numbers are all written, one on a card, the cards may be mixed. The game is to arrange the cards in order, from 1 to 10 in one column, from 11 to 20 in the next column, etc.

Enrichment activities. Children who do not need help at this time may make numbered cards like those described above.

Notes

1	11	21	31	41
10	20	30		

21	31
23	33
25	35
27	37
29	39

UNDERSTANDING THE MEANING OF NUMBERS TO 50

Preparatory Activities

Many things have been done to help the children understand the tens idea of our number system. The decades have been emphasized both in reading and in writing numbers. Charts have been made to emphasize the idea of tens, and counting by tens has been developed. The children may now extend their understanding of the meaning of numbers by counting tens and ones to find how many there are. An exercise for this experience is provided on page 78.

Using concrete objects. Before the children have the exercise with semiconcrete materials, they should use actual objects. Counting blocks, counting sticks, and their counting objects may be used.

Arrange on the table a row of 10 objects, such as blocks, books, or erasers. Place beside this row 4 more objects. Explain that there are 10 objects in the row. Ask the children to count the ten and the ones to find the number of objects. Repeat the experience with 2 rows of ten and 3 single objects, 3 rows of ten and 8 single objects, 4 rows of ten and 6 objects.

Then use the bundles of 10 counting sticks, milk straws, or toothpicks. These may be arranged with 2 bundles and 7 extra sticks. The children count the bundles as tens and the extra sticks as ones to find how many there are. One to 4 bundles may be used, with extra counters of 1 to 9. The children count by tens and ones to find the number of sticks each time.

The children may place their own counters on the desks in rows of ten with 1 to 9 extra counters. Then they may count by tens and ones to find how many counters there are.

Using Page 78

Help the children identify the knights and find that there are 10 of them in each box on the page. In the picture at the top of the page, have them count the boxes of knights as tens and the single knight as a one. Have them write the number they counted on the line at the right. Follow the same plan with each of the other exercises.

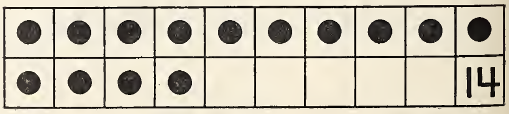
Follow-up Activities

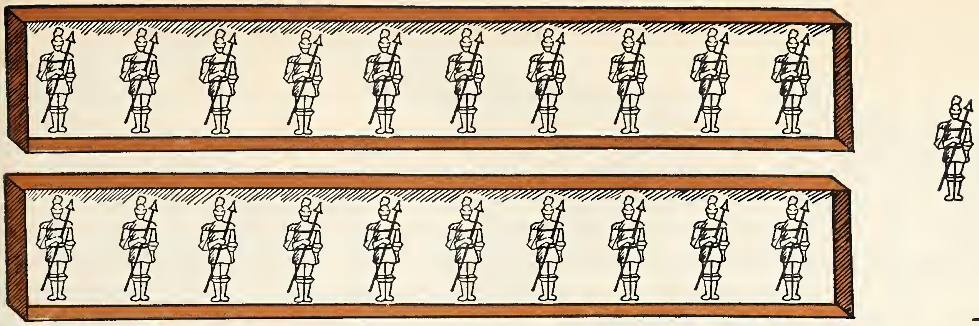
Additional learning helps. If some of the children had difficulty with the exercise in their books, they probably need more help in counting by tens. The illustrated number chart may be used for this purpose, and also the bundles of counting sticks. The child may count, "10, 20, 30, 40, 50," as he places 5 bundles on the desk.

Then he may be given 3 bundles and 5 sticks to count by tens and ones. Several experiences of this type should help him get the idea.

If the children continue to have difficulty, the number chart with the symbols may be used. A piece of paper may be cut out so that it will cover the numbers from 36 to 50 on the chart, leaving only the numbers 1 to 35 to be seen. The children may be told that they can read the numbers to 35, but that they can also count the three columns as tens and the numbers from 31 to 35 as ones, saying, "10, 20, 30, 31, 32, 33, 34, 35." In this way, they understand what we do when we count by tens and ones.

Enrichment activities. The faster learners may be given strips of paper ruled in 1-inch squares with 10 squares in a row. They may color squares or draw circles in the squares to show what numbers such as *14* or *37* mean.





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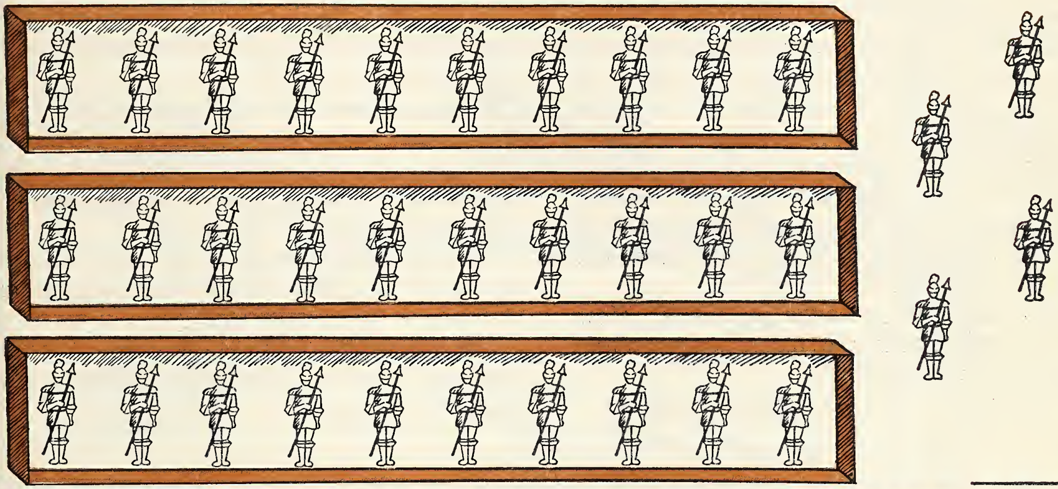

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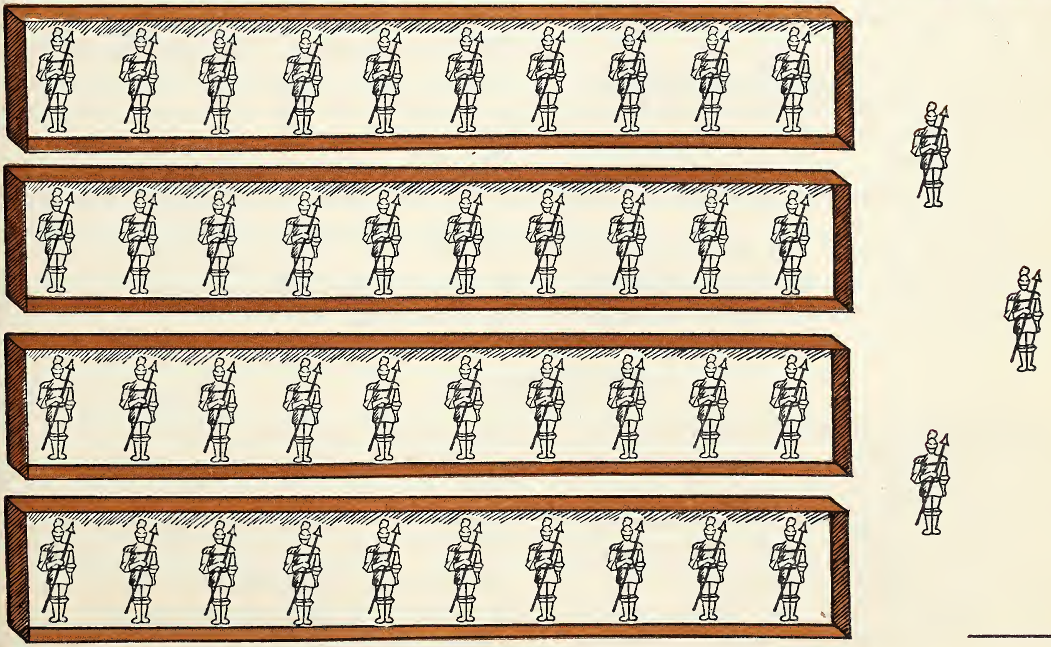

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SEEING 4 AND 1 AND A GROUP OF 5

Preparatory Activities

Experiences in noting that subgroups of 4 and 1 as well as subgroups of 1 and 4 make up a group of 5 are provided on page 79. These experiences prepare the children for the introduction of the addition facts 4 and 1 are 5, and 1 and 4 are 5, on page 80.

Using informal arrangements. If possible, realistic groups in the classroom should be used to introduce the subgroups within a group of 5. For example, in the fish bowl there may be 4 goldfish and 1 blackfish, or 1 small turtle and 4 larger turtles; or there may be 1 girl and 4 boys working in a group.

If realistic arrangements are not in evidence, these arrangements can be planned:

Have on the table 4 large books, such as picture books, and 1 book that is smaller. Ask these questions:

How many large books are there? How many small books are there? How many books are on the table?

Then open 1 of the 5 books, and ask:

How many books are open? How many are closed? How many books are there?

Arrange a group of 4 boys and 1 girl in the front of the room. Have 1 of the boys reading and the other children writing. Then ask:

How many boys are there? How many girls are there? How many children are there?

How many of the children are reading? How many are writing? How many children are there in the group?

Using patterned arrangements. The children may make the following patterned arrangements of groups of 5 at their desks with their counting objects. The teacher may give them these directions:

Place 4 counters on the desk. Place 1 more counter below them. How many counters are there in the group?

Place 1 counter on the desk. Place 4 more counters below it. How many counters are there in this group?

Using Page 79

Call attention to the corral and the toy horses in the picture at the top of the page. Then ask:

How many horses are in the corral? How many are out of the corral? How many horses are there in this picture?

Have the children read the sentence and write on the line the number that tells how many horses there are.

For the next picture, ask the three questions again in the same sequence. Have the children write the total number of horses.

Have the children read the first direction in the next exercise and trace the 4 balls. Then have them read the next direction and trace the 1 ball. They may write on the line the number that tells how many balls they drew.

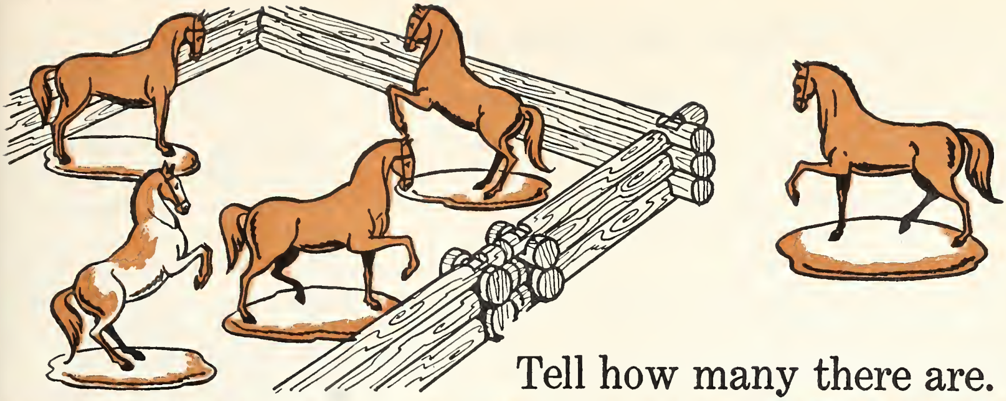
Have the children read the first direction in the next exercise and do what it tells them to do. Then have them read the next direction and follow it. They may write on the line the number that tells how many balls they drew this time.

Follow-up Activities

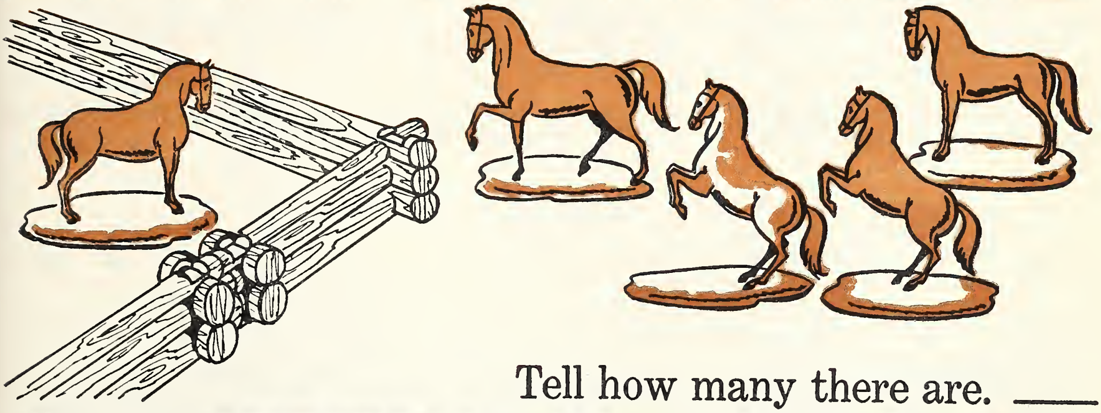
Additional learning helps. If there are any children who need more experiences with groups, they may be given opportunities to study groups of 5 again in informal arrangements, and to make groups in patterned arrangements with their counters.

These children will profit from making cards with pictures to illustrate the groups. For example, they may draw 4 animals at the top of a card and 1 animal at the bottom. Then they may draw 1 toy at the top of another card and 4 toys at the bottom. Ideas for pictures are given on page 162.

Enrichment activities. The children who do not need help may wish to make cards showing groups of 5 for the arithmetic table.



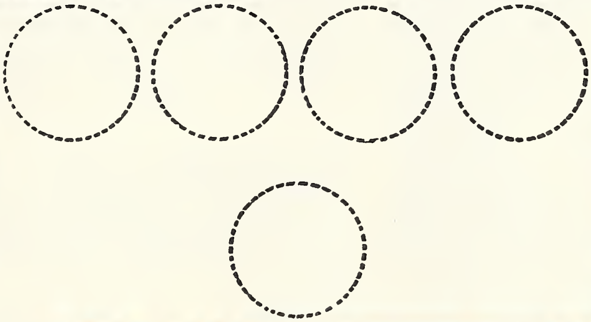
Tell how many there are. ____



Tell how many there are. ____

Draw 4 balls.

Draw 1 ball.



____

Draw 1 ball.

Draw 4 balls.

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

The addition facts 4 and 1 are 5, and 1 and 4 are 5, will be introduced on page 80 through pictures that illustrate oral number stories. The children will state the facts from pictures which illustrate them.

Using dramatization. Classroom activities that lend themselves to the purpose may serve as sources for the number stories that use the two new facts. These may be dramatized by the children. The following stories may be used if the teacher prefers:

One day 4 ladies were making cookies for a party. One more lady came to help. How many ladies were making cookies then? How many are 4 ladies and 1 lady?

One man was hanging lanterns for the party. Four more men came to help. How many men were hanging lanterns then? How many are 1 man and 4 men?

Using concrete objects. After the dramatizations, the children may discover the new facts with their counting objects at their desks. These directions may be given:

Put 4 counters on the desk. Put 1 more counter below them. Put the counters together. How many are 4 counters and 1 counter?

Put 1 counter on the desk. Put 4 more counters below it. Put the counters together. How many are 1 counter and 4 counters?

Using Page 80

Help the children identify the giraffes and the tigers in the pictures. Tell them that the pictures at the top of the page tell this number story and show the answer to the question:

One day 4 giraffes were eating leaves from a tall tree. One more giraffe came to eat. How many giraffes were eating then?

Have the children read the illustrated example, "4 giraffes and 1 giraffe are 5 giraffes." Have them write the answer.

Now point out the pictures of the tigers. Tell the children that these two pictures tell this number story and show the answer to the question:

On a sunny day 1 tiger was resting in the shade. Four more tigers came to rest in the shade. How many tigers were resting in the shade then?

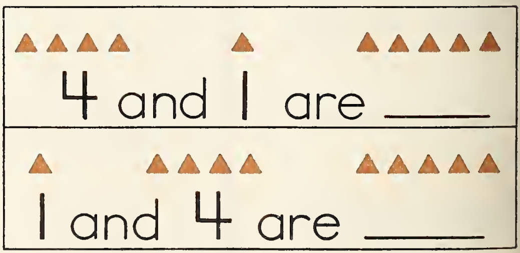
Have the children read the illustrated example, "1 tiger and 4 tigers are 5 tigers." Have them write the answer.

Follow-up Activities

Additional learning helps. If there are some children in the group who need more help in learning the new facts, they may be able, with the help of the teacher, to make up number stories that use the facts. Then they may dramatize these stories.

After they have done this, they may build the facts again with their counting objects. Perhaps they will wish to play that the counters are zoo animals, such as monkeys, bears, or elephants.

After the children are sure of the new facts, they may make cards to illustrate them. They may choose their own pictures for the cards; or they may use the pictures in the next column as models.



Enrichment activities. The faster learners may be able to find pictures in magazines that suggest number stories which use the new facts. They may tell the number stories to each other. If they wish, they may mix the numbered cards they made (see page 172) and put them in order in columns of 10.

4 and 1 are ____

1 and 4 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The addition facts that were just learned are used in oral number stories on page 81. Practice examples which use these facts and others that were introduced earlier are also provided. In these examples, as in those on page 75, words instead of pictures indicate what the numbers represent.

Using dramatization. Number stories which use the new facts may be stated orally for the children to dramatize. Since the emphasis is to be on learning to solve problems, the dramatization should be stopped before the groups come together and the action is completed. After the children have an opportunity to think of the answer, the addition fact should be written on the blackboard.

Stories growing out of classroom activities may be dramatized. Or, if the teacher prefers, these stories may be used:

Jane had 4 dolls. She was given 1 more doll for her birthday. How many dolls did Jane have in all? How many are 4 dolls and 1 doll?

Jane had 1 doll hat. She made 4 more hats. How many doll hats did Jane have then? How many are 1 hat and 4 hats?

Write the examples as shown here. Let the children add, and write the answers:

$$\begin{array}{l} 4 \text{ dolls} \\ \underline{1 \text{ doll}} \\ \quad\text{dolls} \end{array} \qquad\qquad \begin{array}{l} 1 \text{ hat} \\ \underline{4 \text{ hats}} \\ \quad\text{hats} \end{array}$$

Making sure of vocabulary. It is very important that the children be able to read the words which will be used in the examples in the pupil's book. These words have all been introduced with pictures on preceding pages. However, it may be advantageous to review them now, since they will be used frequently from this time on without the help of pictures. The word *girls* will be introduced on this page of the pupil's book. The words which were introduced earlier and are used on this page in examples are: ponies, kittens, cows, ducks.

Using Page 81

Tell this number story as the children study the picture at the top of the page:

One day 4 girls were dressed up like ladies. One more girl came to play. How many girls were dressed up then?

Have the children read the question and say the answer. Then have them trace the numbers in the example and write the answer.

Tell this story as the children study the next picture:

The boys were having fun too. One boy was dressed in an Indian suit. Then 4 more boys came in Indian suits. How many boys were playing Indian in all?

Have the children read the question and say the answer. Then have them trace the numbers in the example and write the answer.

Help the children read the direction above the row of examples. Explain that it means to add and write the answers.

Follow-up Activities

Additional learning helps. By examining the children's work very carefully, the teacher will be able to determine the types of difficulty they have had. If there are any children who need help in learning the addition facts, they may use the illustrated study cards to learn them. Then they may practise writing the facts they missed.

Enrichment activities. The faster learners may make study and practice cards for the new facts similar to those shown in the enrichment activities on page 168.

4 girls

1 girl

How many are 4 girls and 1 girl? ____ girls

1 boy

4 boys

How many are 1 boy and 4 boys? ____ boys

Tell how many there are in all.

2 ponies	4 kittens	1 cow	1 duck
2 ponies	1 kitten	1 cow	4 ducks
____ponies	____kittens	____cows	____ducks

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Some of the addition facts that have been learned may now be used in an exercise which is planned to develop readiness for problem solving. A single action picture illustrates the number story which will be told by the teacher. The children write the answer for the question in the story. Page 82 provides such an exercise, and also examples which use the addition facts.

Using dramatization. The teacher can probably best help the children understand how to solve problems by letting them dramatize number stories so that they can visualize the action that takes place. The dramatization should be stopped before the action is completed. This enables the children to think what the answer will be when the groups are combined.

Stories growing out of classroom activities may be dramatized. Or, if the teacher prefers, the following number stories may be used:

One day 3 boys were fishing. One more boy came to fish. How many boys were fishing then?

Ted caught 2 fish. Then Billy caught 1 more. How many fish did the boys catch in all?

Soon Tom caught 1 fish. Then Bob caught 1 more fish. How many did these boys catch?

The boys saw 1 wild duck on the water. Then 2 more ducks came. How many ducks did the boys see?

In the first number story, have the 3 boys pretend to fish. Have 1 boy coming toward them. Then stop the dramatization and ask the question, "How many boys were fishing then?" Let the children think of the answer and write it on the blackboard beside the word *boys.* Follow the same plan for each story, letting the children pretend that erasers, balls, blocks, etc., are the fish and ducks.

The words *rabbits* and *chickens* are introduced on page 82. Words introduced earlier may be reviewed: kittens, girls, ponies, dogs, cows, ducks, pigs.

Using Page 82

Tell the children these number stories. They are to look at the pictures and listen, and then write the answers.

One little chicken is eating food from a pan. Four more chickens are coming to eat. How many chickens will be eating in all?

Two rabbits are in the farmer's garden. Two more rabbits are coming. How many rabbits will be in the garden then?

One girl is washing doll clothes. Three more girls are coming to help. How many girls will be washing doll clothes then?

Four ponies are in the field. One more pony is going into the field. How many ponies will be in the field then?

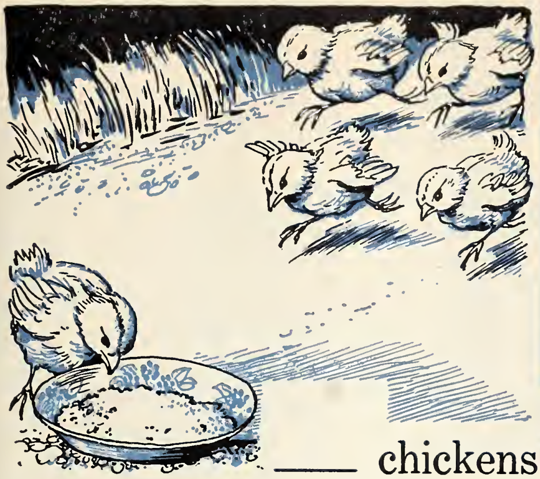
Have the children read the direction line above the examples. Have them write the answers.

Follow-up Activities

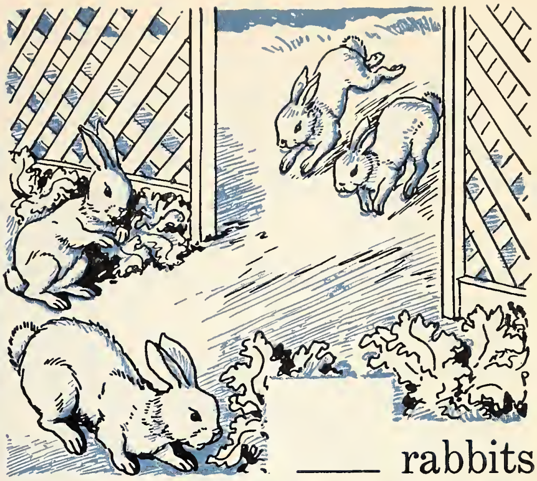
Additional learning helps. If there are any children who had difficulty with the number stories, it will be helpful to have them dramatize the stories they missed. In this case, the dramatization should be completed so that they can see the answer after the groups are combined.

Since all of the addition facts that have been introduced so far are included in the examples, the teacher will wish to tabulate the results of the children's work to find which facts, if any, need further attention. The children who made mistakes should study in the usual way the facts they do not know.

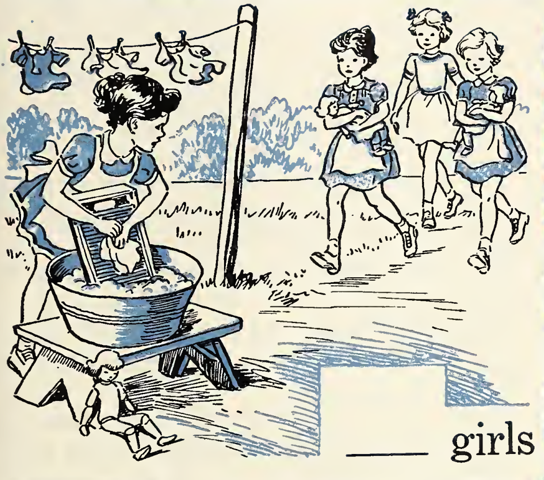
Enrichment activities. The faster learners may be able to use some of the pictures cut from magazines to illustrate number stories. They may tell the stories to each other and write the answers.



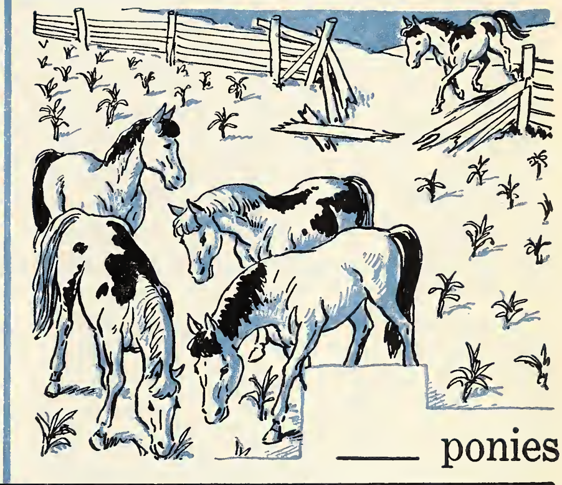
____ chickens



____ rabbits



____ girls



____ ponies

Tell how many there are in all.

2 rabbits
1 rabbit
____rabbits

1 kitten
3 kittens
____kittens

1 dog
1 dog
____dogs

4 cows
1 cow
____cows

3 ducks
1 duck
____ducks

2 chickens
2 chickens
____chickens

1 pig
4 pigs
____pigs

1 pony
2 ponies
____ponies

LEARNING TO TELL TIME

Preparatory Activities

The pupils may now be taught to tell time to the hour. Telling time to the hour is the first learning step in telling time, and the only one which will be introduced at this grade level. Material for this learning step is provided on pages 83 and 84 of the pupil's book.

Associating time with events of the day. Since it is important that useful concepts of time, as well as the ability to tell time, be developed, emphasis should be placed upon associating events of the day with the time at which they occur. In this way awareness of time and the amount of time various activities consume can be developed.

A rather large clockface with hands that can be moved easily will be useful in teaching the children to tell time. If possible, this should be a clock on which the hands are synchronized, so that the children will understand that the minute hand (the long hand) moves all the way around the clockface while the hour hand (the short hand) moves from one number to the next. Perhaps the children can observe the school clock at two consecutive hours, as, for example, at 10 o'clock and again at 11 o'clock, to see how the hands have moved. If possible, each child may have an opportunity to manipulate the hands of an old alarm clock, turning them from one hour, such as 8, to the next hour, 9, and observing what happens to the hands. Clockfaces made of cardboard or paper plates, with hands the children can move, may also be used for individual practice.

The first step should be to show the children how the hours are indicated on the clock. Paper clocks may be used to show each of the hours in an activity based on realistic situations such as the following:

John gets up at 7 o'clock. The long hand is at 12 and the short hand points to 7 when it is 7 o'clock.

Mary has breakfast at 8 o'clock. The long hand is at 12 and the short hand points to 8 when it is 8 o'clock.

Perhaps these events may be used to follow through the twelve hours. If not, others may be substituted.

School begins at 9 o'clock. Recess comes at 10 o'clock. Music is at 11 o'clock. We have lunch at 12 o'clock. School opens in the afternoon at 1 o'clock. Afternoon recess is at 2 o'clock. We have story hour at 3 o'clock. Tom gets home at 4 o'clock. Bob's favorite television program is at 5 o'clock. We have our evening meal at 6 o'clock. We play games with our family at 7 o'clock. We go to bed at 8 o'clock, etc.

As the schedule is developed, the teacher may move the hands of a paper clock or old alarm clock. The children should observe the clock's hands move from hour to hour, and tell the time. If each child has made a paper plate clock or a cardboard clockface, he may set his clock to show the time each event occurs.

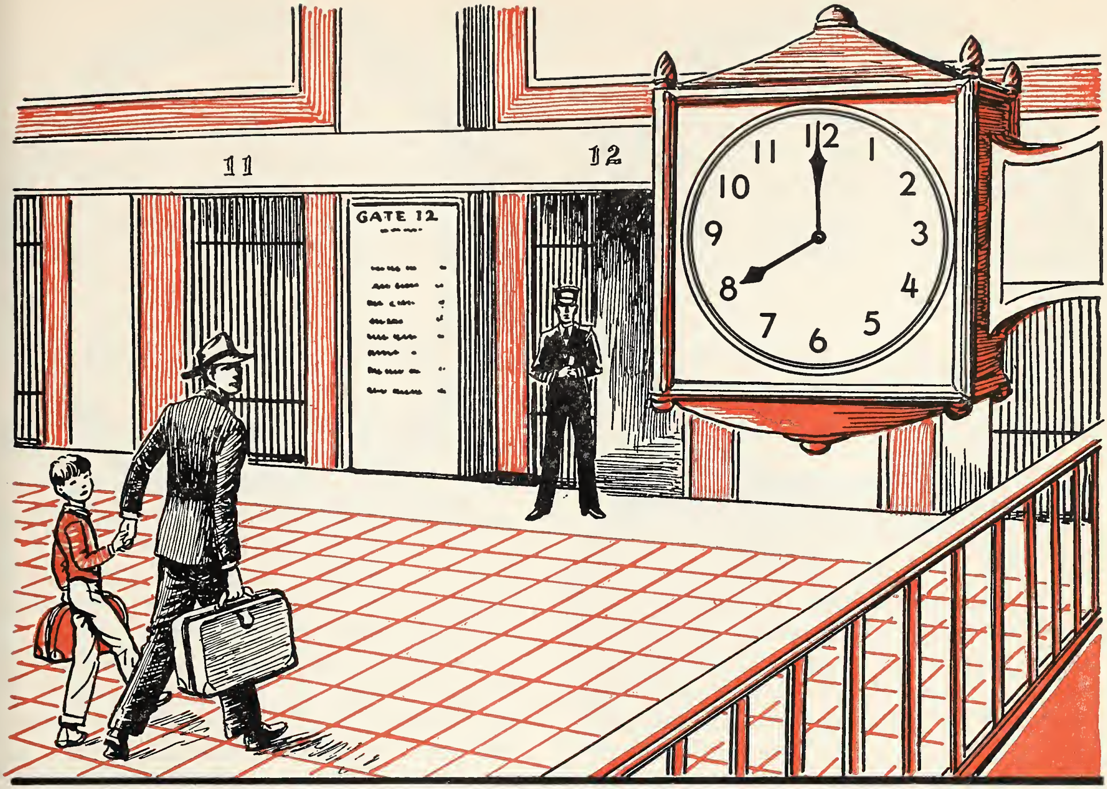
The classroom clock should be observed at intervals to help the children apply what they are learning.

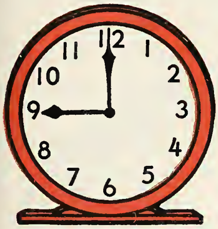
From these experiences should come the realization that the long hand is at 12 when the short hand points to the hour. Both hands are needed to tell the time.

Several clockfaces may be drawn on the blackboard with the long hands at 12. The children may draw the short hands to show various hours as the teacher names them. The clockfaces made by the children may also be used for this practice work. Each child should set his clock at the hours indicated by the teacher.

Using Page 83

Call attention to the situation in the big picture at the top of the page. The clock shows the time the boy and his father were at the station. Have the children write *8* in the box beside the big station clock to show the time. Then have them write on the black line below each clock the hour shown by that clock.


11
12
GATE 12



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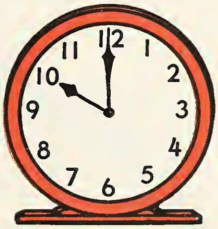

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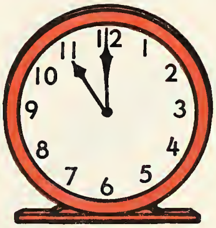

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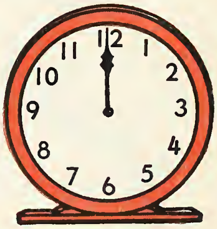

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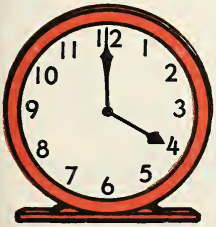

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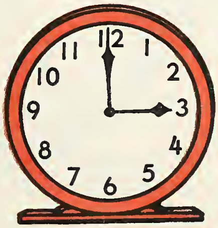

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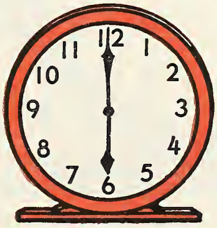

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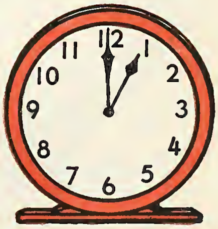

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Learning to Tell Time (continued)

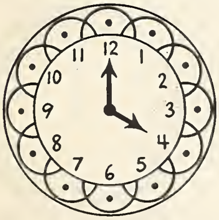
Using Page 84

The exercise on page 84 is planned to help the children show the time indicated by the numbers below the clocks. They do this by drawing the hour hands. Explain that the long hands are all drawn, but that the children are to draw the short hands so that each points to the hour which the number below the clock calls for. The children may work alone while the teacher observes and helps as her help is needed.

Follow-up Activities

Additional learning helps. If some of the children need more help in learning to tell time to the hour, the experiences suggested as preparatory activities may be continued. If they have not made clockfaces, it may be a good idea to help them do so.

If paper plates are available, the clockface may be drawn in the bottom of the plate. Two small strips of cardboard may serve as the hands, and a paper fastener with a round head may be used to attach them. The children may make designs around the border of the plate. If plates are not available, a large circle cut from cardboard may be used. For example:



The teacher will need to help the children put the numbers on the clockfaces. It may be that some of them can write the numbers themselves if a circle of cardboard is provided with 12 equally-spaced notches cut in it to show where each number goes on the clockface. After the clockfaces are made, the children may be given three kinds of experiences with them. In the first place, they should have practice in showing that the short hand moves from one number to the next while the long hand moves all the way around the clock's face. Then they should have practice in telling what hour the clock shows. Finally, they should have experience in setting their clocks to show various hours as the teacher indicates the hours to be shown.

These children may then be given an opportunity to show the time when various events of the day occur. For example, they may show the time they get up, the time they go to bed, the time their favorite radio or television program begins, the time they usually have breakfast, and the time they usually have their evening meal.

It will be well to ask these children, as often as possible, to tell the time shown by the classroom clock. For example, the teacher may ask, "John, what time is it by our big clock? What do we usually do at this time?"

Having certain children responsible for watching the time is a good teaching device also. For example, the teacher may say, "Today Mary may tell us when it is time for recess."

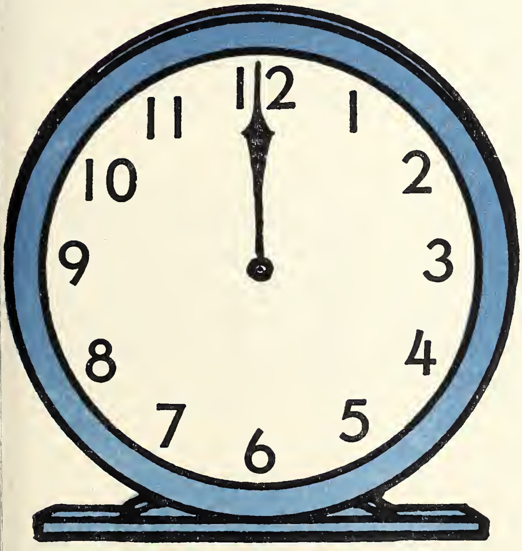
Such activities help children become aware of the ways in which we use the ability to tell time and, therefore, motivate learning.

Enrichment activities. The children who do not need help at this time may make several clockfaces for the arithmetic table. These clockfaces may be used by the children for practice in telling time when opportunities arise. They may also be used to tell when regular events of the daily program occur. One clock may be set at 9 o'clock to show when school begins; another may be set to show recess time; another, to show reading time; another, to show arithmetic time; another, to show when it is time for lunch; and so on.

These children may cut pictures of clocks from magazines. The pictures may be mounted on art paper and put on the arithmetic table for use for practice in telling time.

7

2



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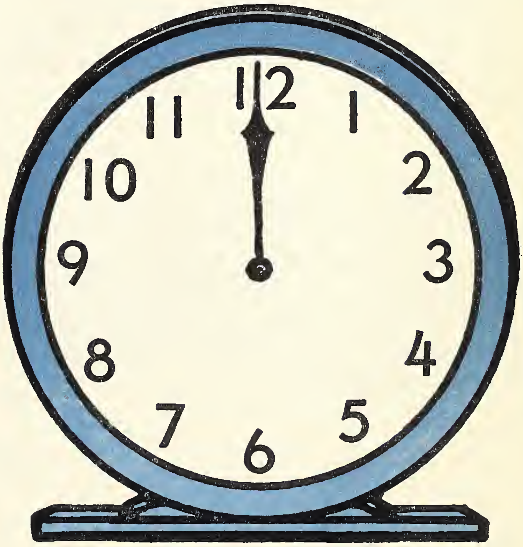


8

SEEING 3 AND 2 AND A GROUP OF 5

Preparatory Activities

Experiences in noting that subgroups of 3 and 2 make up a group of 5 are provided on page 85 of the pupil's book. These groups parallel the addition facts 3 and 2 are 5, and 2 and 3 are 5, which are introduced on page 86.

Using informal arrangements. If possible, realistic groups within the classroom should be used to help the children discover that subgroups of 3 and 2 make up a group of 5. If this is not possible, the teacher may arrange such informal groups as the following:

Have 3 girls and 2 boys pretend to play a game at the arithmetic table. Ask how many girls there are, how many boys there are, and how many children are at the arithmetic table.

Then have 2 children work at the blackboard and 3 children work at the table. Ask how many children are at the blackboard, how many children are at the table, and how many children there are in the whole group.

Opportunities may be provided for the children to see the subgroups with large objects in informal arrangements. As has been suggested for previous pages of this kind, books, toys, blocks, rulers, etc., may be used for these experiences.

Using patterned arrangements. The teacher will wish to have the children discover the subgroups and the groups of 5 in patterned arrangements with their counting objects. These directions may be given as the children build the groups:

Place 3 counters on the desk. Place 2 more counters below them. How many counters are there in the whole group?

Place 2 more counters on the desk. Place 3 more counters below them. How many counters are there in this group?

Using Page 85

Let the children discover that in each picture some of the puppies are in the basket and some are out of the basket. Ask:

How many puppies are in the basket? How many are out of the basket? How many puppies are there in this picture?

Have the children read the direction and write the answer.

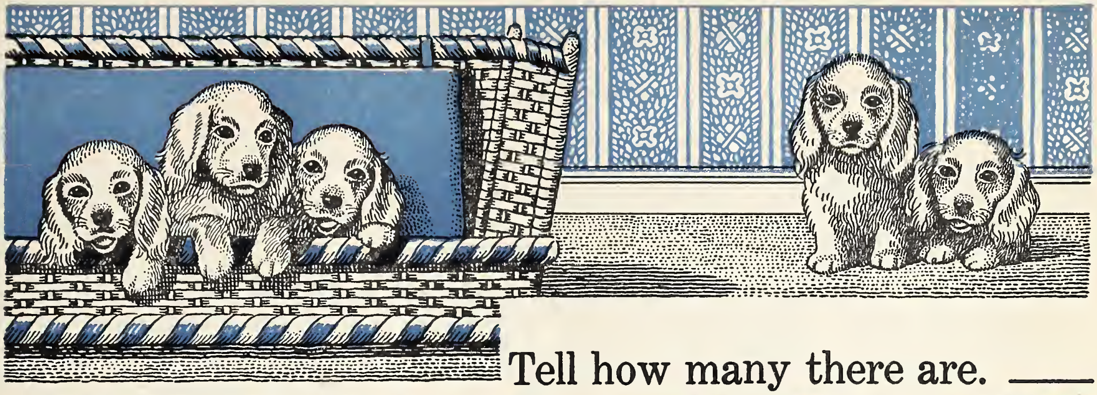
Have the children trace and draw balls as directed. Then have them write on the line at the right the number of balls they drew in each part of the exercise.

Follow-up Activities

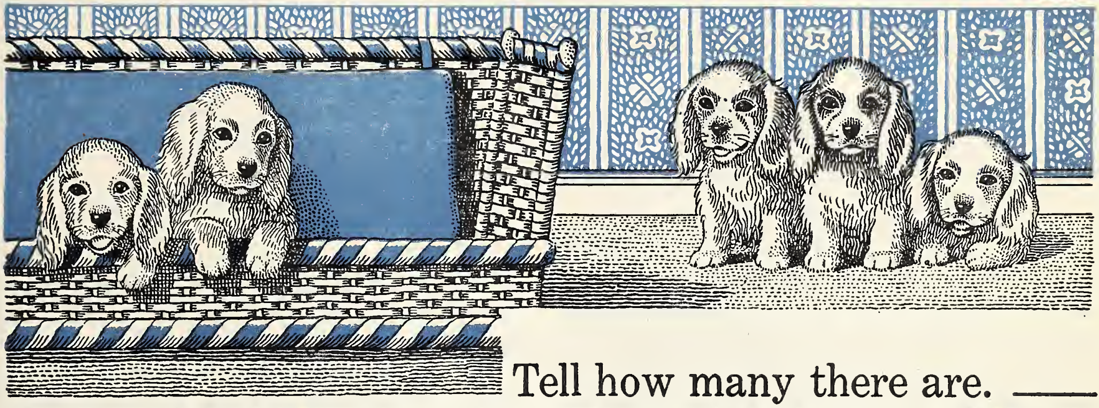
Additional learning helps. If some of the slower learners need more help, experiences like those suggested for preparatory activities may be given. After the children build the groups with their counting objects, they may make pictures to show the groups, as suggested on page 114.

Enrichment activities. The faster learners may make illustrated cards to show the groups of 3, 2, and 5 for the arithmetic table. Some of the children may be able to find in magazines pictures that show groups of 3 and 2, or 2 and 3. These will be useful later as sources for number stories.

Notes

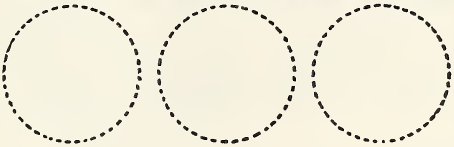


Tell how many there are. ____



Tell how many there are. ____

Draw 3 balls.



Draw 2 balls.

____

Draw 2 balls.

Draw 3 balls.

____

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

The addition facts 3 and 2 are 5, and 2 and 3 are 5, are introduced at this time. Page 86 of the pupil's book provides action pictures which illustrate oral number stories. The children state the facts from the pictures.

Using dramatization. If classroom activities are in progress on which number stories using the new facts may be based, such stories should be told and dramatized. If not, the following stories may be used:

One day 3 boys were flying kites. Two more boys came. How many boys were flying kites then?

Two girls were skipping rope. Then 3 more girls came. How many girls were skipping rope in all?

After each dramatization, children should be arranged in groups to demonstrate the facts, and the facts should be stated thus: 3 boys and 2 boys are 5 boys; 2 girls and 3 girls are 5 girls.

Using concrete objects. The children may build the facts with their counting objects as the teacher gives these directions:

Put 3 counters on the desk. Put 2 more counters below them. Now put them together. How many are 3 counters and 2 counters?

Put 2 counters on the desk. Put 3 more counters below them. Now put them together. How many are 2 counters and 3 counters?

Using Page 86

Help the children see that the pictures tell number stories and show the answers to the questions in the stories. Tell this story:

Three clowns were standing in a group at the circus. Two more clowns climbed on their shoulders. How many clowns were in the group then?

Help the children read the fact, "3 clowns and 2 clowns are 5 clowns." Then have them write the answer.

Tell the following story while the children study the two pictures that show circus elephants:

Two elephants were standing on their hind legs. Three more elephants came. How many elephants were standing on their hind legs then?

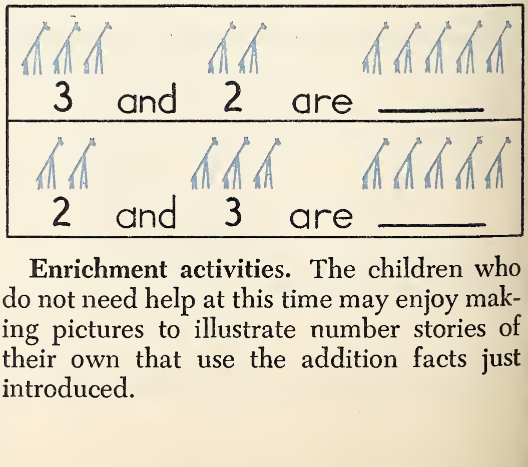
Help the children read the fact, "2 elephants and 3 elephants are 5 elephants." Then have them write the answer.

Follow-up Activities

Additional learning helps. The teacher will wish to give the children who had difficulty with page 86 opportunities to learn the new facts before they attempt to use them in number stories and examples. The teacher may tell number stories to be dramatized similar to those provided in the pupil's book. The children, with the teacher's help, may be able to make up number stories of their own.

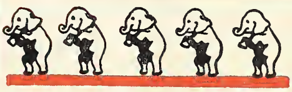
Then the children should build the facts again with their counting objects. It will help them also if they study the cards that were made to illustrate the groups of 3, 2, and 5.

After the children have studied the new facts, they may make cards to illustrate them. This plan may be used:



Enrichment activities. The children who do not need help at this time may enjoy making pictures to illustrate number stories of their own that use the addition facts just introduced.

3 and 2 are ____



2 and 3 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The next step for the children is to use the two new facts in number stories and to write the facts in vertical form. Then these facts, with other facts learned previously, may be used in examples. Page 87 provides exercises for these purposes.

Using dramatization. Number stories may be told for the children to dramatize. The dramatization should be stopped before the groups come together to enable the children to think of the answers for the questions in the stories. Then the children may write the facts with words on the blackboard in vertical form. These, or similar, stories may be told:

Three girls were playing house. Two more girls came to play. How many girls were playing house in all? How many are 3 girls and 2 girls?

Two boys were spinning tops. Three more boys came to spin tops. Then how many boys were spinning tops? How many are 2 boys and 3 boys?

Using Page 87

If necessary, introduce the words *boats* and *wagons.* Then tell this number story:

One day 3 sailboats were tied up at the dock. Two more boats sailed to the dock. How many boats were at the dock then?

Have the children read the question and say the answer. Then have them trace the numbers in the example, find and write the answer, and read the addition fact.

This story may be told for the next picture:

Ted was playing train with 2 wagons. Fred came with 3 more wagons for the train. How many wagons were in the train in all?

Have the children read the question in their books and say the answer. Then have them trace the numbers in the example, find and write the answer, and read the addition fact.

The children may read the direction above the examples. Then they may find and write the answers for the examples.

Follow-up Activities

Additional learning helps. If the slower learners had difficulty with the exercises on page 87, the teacher will find it advisable to provide whatever help is needed to enable them to overcome their difficulties. If they do not understand the number stories, they may be given other stories to dramatize. Then they may make pictures to illustrate the stories. This technique helps them react to each detail in the story and interpret it both as to the numbers involved and as to the concept.

If the addition facts have not been learned, each child should study the cards which illustrate the facts.

Then he may build the facts again with his counting objects.

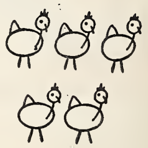
When he is sure of the facts, he may say them four or five times.

Enrichment activities. The faster learners may make study and practice cards for the arithmetic table, or for their folders. These cards may follow the plan suggested below. Each child may draw original pictures for the cards if he wishes, or follow the suggestions on page 162.

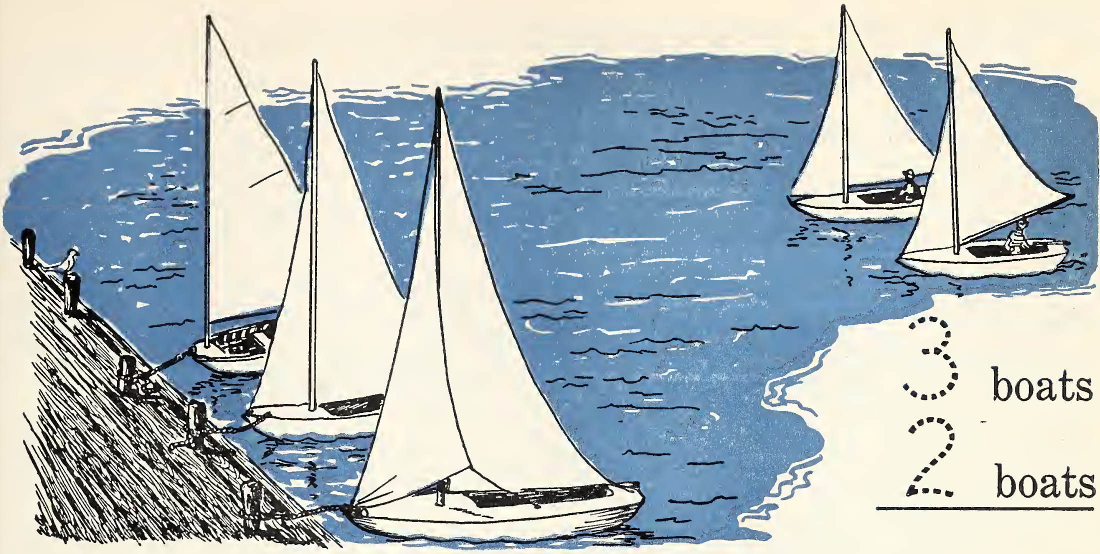
Front

3 hens   2 hens
2 hens   3 hens
___hens   ___hens

Back

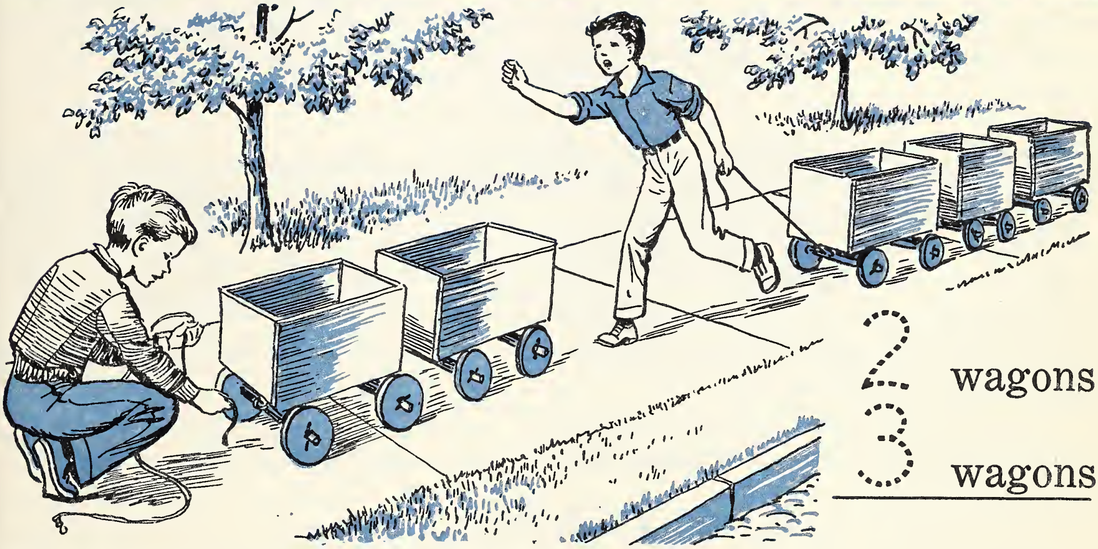


3 hens   2 hens
2 hens   3 hens
5 hens   5 hens



3 boats
2 boats

How many are 3 boats and 2 boats? ____ boats



2 wagons
3 wagons

How many are 2 wagons and 3 wagons? ____ wagons

Tell how many there are in all.

1 boat	2 chickens	3 wagons	3 dogs
3 boats	3 chickens	1 wagon	2 dogs
____boats	____chickens	____wagons	____dogs

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Another exercise in solving oral number stories which are illustrated is provided on page 88. Examples that use the addition facts that have been learned are also provided on this page.

Using dramatization. The children can be helped to interpret problem situations and visualize the addition process through the use of dramatization. As was suggested previously, the dramatization should be stopped before the action is completed so that the children will have an opportunity to do the addition and find the answer themselves. Then each child may write the answer on his paper.

The stories used for the dramatization may grow out of realistic classroom situations. For example:

John brought 2 goldfish to school. Then Sue brought 2 more fish. How many fish did the children bring to school?

If realistic stories cannot be based on actual classroom activities, they can be based upon imaginary activities. For example, these stories may be told:

Tom brought 1 rabbit to school. Then Ann brought 3 more rabbits. How many rabbits did the children bring?

Sally was making candy ducks for a party. First she made 2 ducks. Then she made 3 more ducks. How many ducks did Sally make in all?

Fred had 1 dog in his pet pen. Bob came with 4 more dogs. How many dogs were in the pen then?

Ted found 2 pigs in the garden. Two more pigs came along. Then how many pigs were in the garden?

Using Page 88

Explain to the children that each picture tells a number story. They are to think of the answer and write it. You may wish to introduce the words *airplanes* and *trains* before telling these number stories:

Two airplanes are on the landing field at the airport. One more airplane is coming. How many airplanes will there be at the airport when the airplane lands?

Three motorboats are tied up at the pier. One more boat is coming to the pier. How many motorboats will be at the pier when this boat gets there?

Three farm wagons are loading with grain. Two more wagons are coming to load. How many wagons will be loading when these wagons get there?

One train is on the nearest track. One train is on another track. How many trains are there in all?

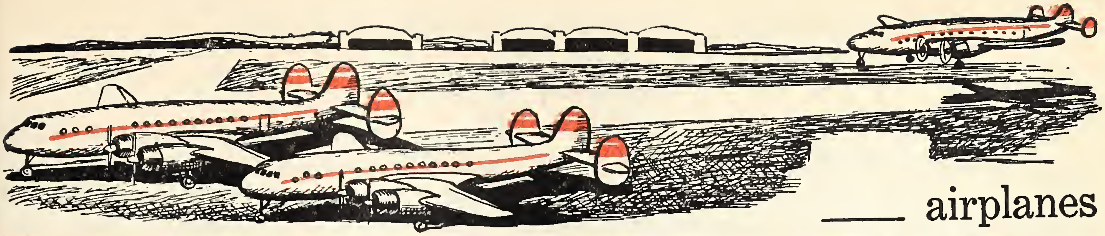
Have the children read the direction above the examples and follow it.

Follow-up Activities

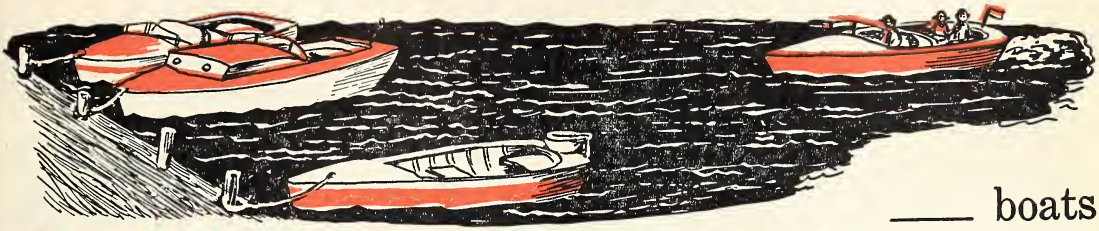
Additional learning helps. If there are any children who had difficulty with the number stories, the teacher will wish to work with them individually to find what caused the trouble. As individual children tell what they think the answers to the problems are, the teacher will know whether they do not understand how to solve problems or whether they do not know the addition facts. When she knows what caused the trouble, she will know what help to give.

If the difficulty is in understanding the stories, the children may dramatize them. If it is failure to learn the addition facts, they may use the study and practice cards to learn the facts they missed.

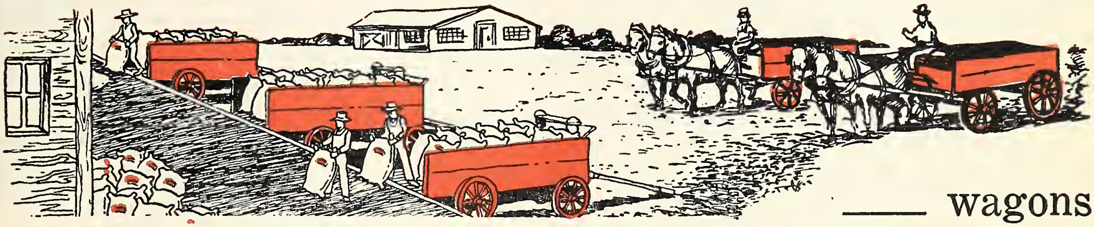
Enrichment activities. The children who do not need help at this time may be interested in making up number stories from some of the pictures they have cut from magazines. Other children may wish to make up their own stories and draw pictures to illustrate them. The study and practice cards will show what facts to use in the stories.



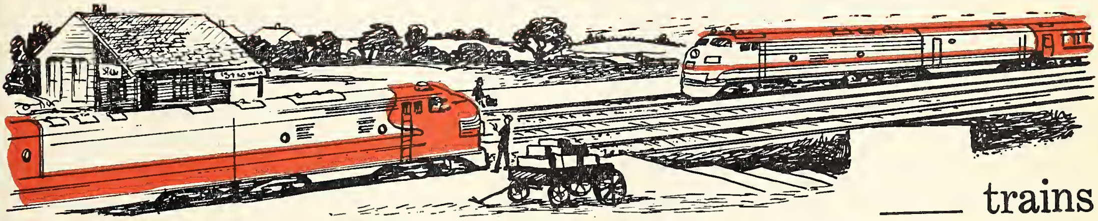
____ airplanes



____ boats



____ wagons



____ trains

Tell how many there are in all.

4 hens	3 pigs	3 kittens	1 chicken
1 hen	1 pig	2 kittens	2 chickens
____hens	____pigs	____kittens	____chickens
1 dog	2 cows	1 wagon	2 airplanes
3 dogs	2 cows	4 wagons	3 airplanes
____dogs	____cows	____wagons	____airplanes

LEARNING ABOUT THE FRACTION *ONE-HALF*

Preparatory Activities

The concept of the fraction *one-half* may be introduced at this time. One-half of an object, but not one-half of a group, is introduced at this level. Two closely related ideas should be developed: one-half is one of two parts, and the two parts are exactly equal. Page 89 of the pupil's book provides exercises to develop these concepts.

Using realistic experiences. Since it is not uncommon for children to think that one-half means one part or one piece, whether or not the pieces are equal, the first experiences should help them realize that the two parts are halves only if each part is just as large as, or just as much as, the other. The teacher may give each of the children a sheet of art paper and ask that they use one-half of it for a picture and the other half for a frame for the picture. Help them fold the paper so that it can be cut in half. Use this experience to develop the concept that there must be two pieces, and that one piece must be just as large as the other. Make sure that the children understand that each part or piece is one-half of the paper and that there are two halves in any whole thing.

Using concrete objects. Many concrete objects should be cut in half. Such things as apples, paper plates, and cardboard squares and rectangles may be cut by the teacher. The children may lay one piece over the other to see whether the pieces are just the same size. They may answer these questions each time:

How many pieces are there? Is one piece just as large as the other? What is each piece called? How many halves are there in each thing?

A realistic problem situation may be used. For example:

John has a glass of milk. He wants to give half of it to Tom. Into how many parts must he divide the milk? How can he be sure that each part is one-half of the milk?

The children may demonstrate the way to divide the milk into halves.

Circles, squares, and rectangles cut from paper may be given to the children. The children may fold these so that they can be cut into two parts that are just the same size. Several different shapes should be used to impress upon the children the fact that the shape of the parts does not matter, but that they must be equal to be halves.

Pieces of paper that have been cut unequally by the teacher may be used to help the children identify pieces that are halves and pieces that are not.

Using Page 89

Explain that the boy and girl in the picture are each to be given a piece of the apple. Develop the concept that there will be two pieces of just the same size.

Ask these questions about the cakes:

How many pieces are there in each cake? Is each piece just as big as the other? Is each piece one-half of the cake?

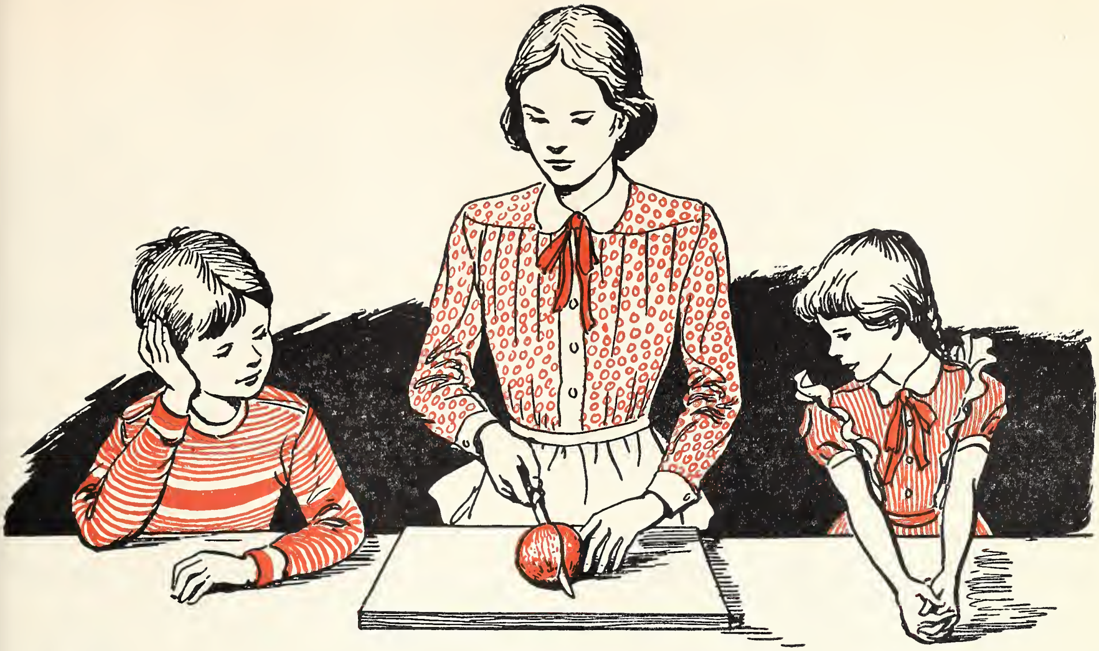
Have the children color one-half of each cake brown.

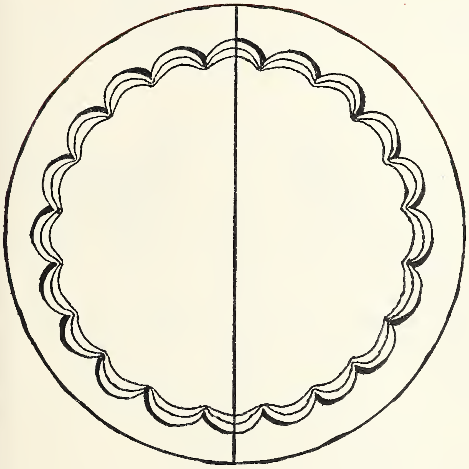
Develop the concept that one sandwich is whole. It has not been cut. Another is cut into halves. Another is cut into pieces that are not halves. Have the children find the sandwich that is cut into halves and draw a line around it.

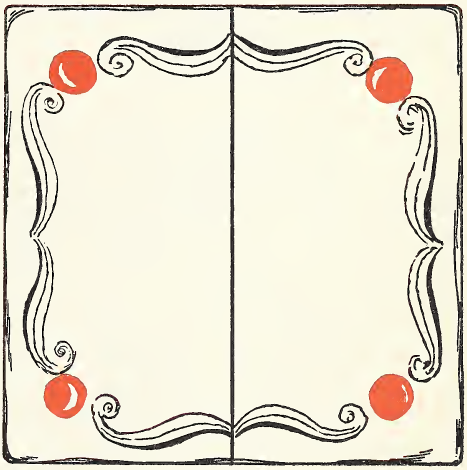
Follow-up Activities

Additional learning helps. If some of the children need more help, they may again be given experiences with concrete objects. They may then be given an exercise similar to the one in their books.

Enrichment activities. The faster learners may be given circles, squares, and rectangles cut from colored art paper. They may cut some of these into halves and leave others whole. Charts may be made with them.







SEEING 3 AND 3 AND A GROUP OF 6; LEARNING ONE MORE ADDITION FACT

Preparatory Activities

On page 90 experiences are provided with groups of 3, 3, and 6. The addition fact 3 and 3 are 6 is introduced and used in a number story and an example.

Using informal arrangements. The teacher may arrange 3 chairs in an informal group and then place 3 more chairs at one side of them. The teacher may point to each group in turn, and ask:

How many chairs are here? How many chairs are there? How many chairs do you see in all?

Using concrete objects. The children may build the groups with counting objects while the teacher gives these directions:

Place 3 counters on the desk. Now place 3 more counters below them. How many counters are on the desk?

Using dramatization. The new addition fact may be introduced through this story, which may be dramatized:

Three books were on the table. Sue put 3 more books on the table. How many books were on the table in all? How many are 3 books and 3 books?

Using concrete objects. The children may discover the new fact with their counters as the teacher gives these directions:

Put 3 counters on the desk. Put 3 more counters below them. Now put the two groups together. How many are 3 counters and 3 counters altogether?

Using the new fact. The teacher may tell this number story for the children to dramatize, stopping the dramatization before the action is completed:

Three kittens were playing with a ball of yarn. Three more kittens came to play. How many kittens were playing in all? How many are 3 kittens and 3 kittens?

Have the children write the example in vertical form with words and numbers.

Using Page 90

Ask these questions about the cups in the picture at the top of the page:

How many cups are in the box? How many are out of the box? How many cups are there?

Have the children read the sentence and write the number.

In the next exercise, have them read the first direction and trace the 3 balls; read the second direction and draw the 3 balls; and then write the number they traced and drew.

Tell the children that the next two pictures tell this number story and show the answer:

One day 3 bluejays were eating an apple. Three more bluejays came. How many bluejays were eating the apple then?

Have the children read the fact, "3 birds and 3 birds are 6 birds." Then have them write the *6*.

Explain to the children that the next picture tells the following story. They are to think of the answer to the question. Then they may read the question, say the answer, and write the addition fact.

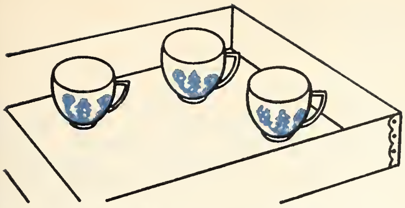
Three of Jane's baby ducks were in a tub of water. Three more ducks came. How many ducks were in the water then?

Follow-up Activities

Additional learning helps. Any children who need help may look at the groups again, and make an illustrated card to show the groups. After the card is made, the children may dramatize a number story that uses the new fact.

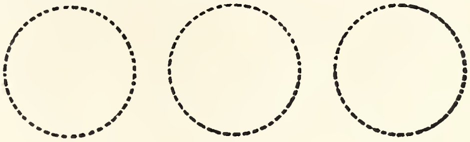
After they dramatize the story, the children may build the addition fact with concrete objects. Then they may try to make up a number story that uses the fact.

Enrichment activities. The faster learners may make cards for the new fact.



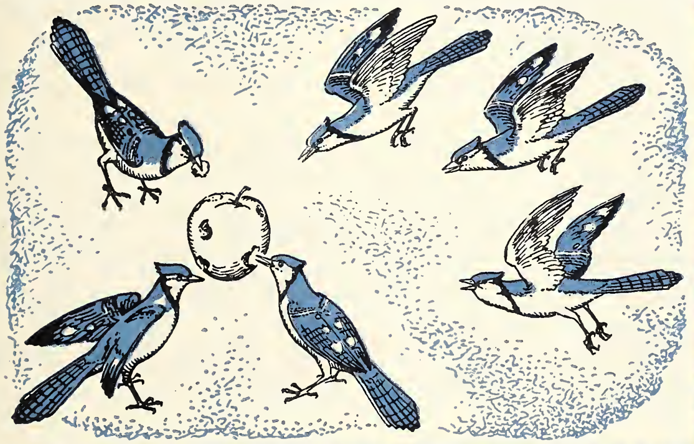
Tell how many there are. ____

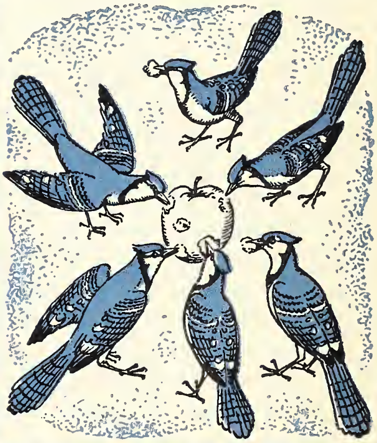
Draw 3 balls.



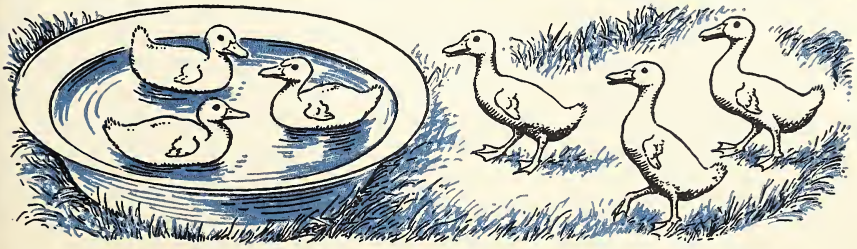
Draw 3 balls.

____





3 and 3 are ____



3 ducks

3 ducks

____ ducks

How many are 3 ducks and 3 ducks?

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Another exercise in learning to solve problems is provided on page 91 of the pupil's book. At the foot of this page are examples which use some of the addition facts already learned.

Using dramatization. Number stories which use some of the addition facts that have been learned may be told for the children to dramatize. Dramatization of realistic number stories is one of the most effective means of helping children visualize the addition process and learn how to solve problems. The dramatization may be stopped after the arithmetical situation is shown so that the children can think what the answer will be.

The number stories may be based upon actual classroom activities. Or, if the teacher prefers, the following number stories may be used:

Tom is making a toy farm. He has 3 clay pigs in the pen. He is making 2 more pigs. How many pigs will Tom have in all?

Tom has 4 cows on his farm. Ted is bringing 1 more cow. How many cows will there be on the farm?

Tom has 1 big dog and 3 little dogs on his farm. How many dogs has he?

Tom made 1 wagon for the farm. His father gave him 1 more wagon. How many wagons are there on Tom's farm?

Using Page 91

The teacher may help the children identify the words *hats, beds,* and *dolls,* if these words are not in their reading vocabulary.

Then the children may be told that each picture tells a number story. The children will study the picture as the teacher tells the story. Then they may think of the answer for the question, and write it. These stories may be told:

Elsie is playing with her dolls. She has made 2 hats for the dolls. She is making 3 more hats. How many doll hats will Elsie have in all?

Ruth has made 1 doll bed. She has 2 more beds to finish. How many doll beds will Ruth have then?

The dolls are having a party. Three dolls are at the table. Jane is bringing 3 more dolls. Then how many dolls will there be at the party?

Have the children read the direction above the examples and follow it.

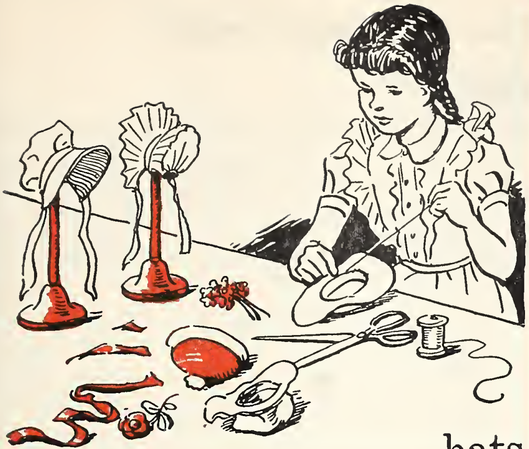
Follow-up Activities

Additional learning helps. The teacher will wish to make a careful diagnosis of the children's work to find which children, if any, had difficulty with the number stories. The teacher will wish to give these children every opportunity to understand addition before they go on to subtraction. Since applying addition in problems is an important step in learning to use addition, every effort should be made now to help the children.

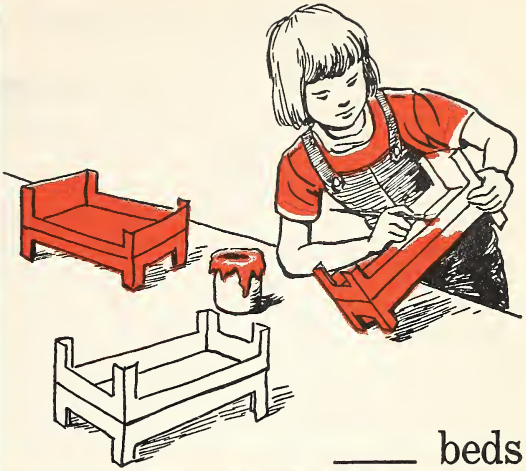
If some children did not understand the number stories, they may dramatize them or use concrete objects to show what they mean. Then the children may be given similar stories to work out by dramatization. Repeated use of this technique should eventually help the children understand and interpret number stories with greater skill.

If some of the addition facts were not known by individual children, these children should be helped to find the cards that show the groups, the illustrated cards, and the study and practice cards for the facts they missed. After each child studies the facts he missed, he may build them with his counting objects and say them three or four times.

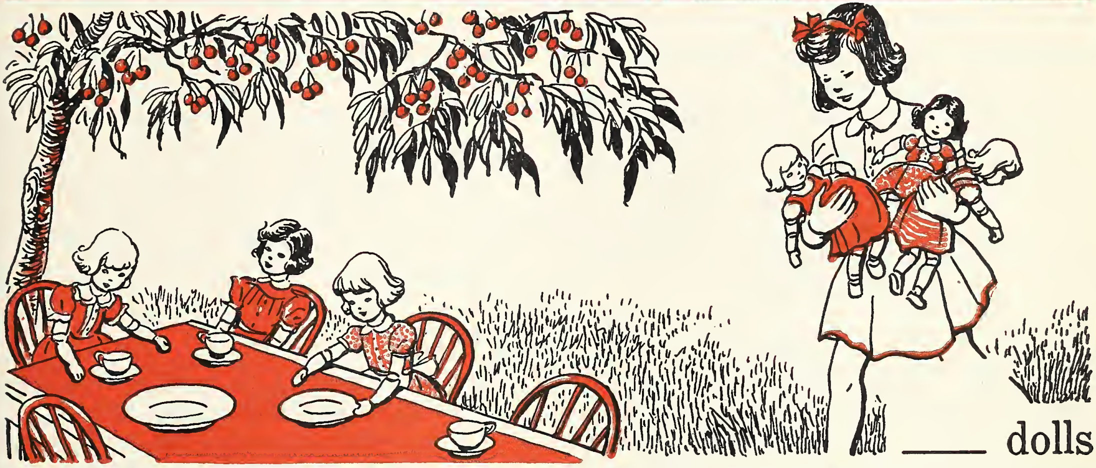
Enrichment activities. The children who do not need help may wish to tell number stories to each other from the pictures they have cut from magazines. Perhaps some children will wish to draw pictures to illustrate number stories which they make up.



____ hats



____ beds



____ dolls

Tell how many there are in all.

2 pigs	1 kitten	3 hens	1 duck
1 pig	4 kittens	3 hens	3 ducks
____pigs	____kittens	____hens	____ducks

3 cows	1 rabbit	4 dogs	2 ponies
2 cows	1 rabbit	1 dog	3 ponies
____cows	____rabbits	____dogs	____ponies

LEARNING THE NUMBER WORDS *ONE, TWO,* AND *THREE*

Preparatory Activities

The number words *one, two,* and *three* are introduced as reading words on page 92 of the pupil's book. After the words are introduced, exercises that use them are provided.

Using realistic situations. The first introduction of the words *one, two,* and *three* should be in realistic situations—in a way the children use them. For example, the children are in Grade One. They use *Making Sure of Arithmetic, Book One.* They probably have friends in Grade Two, in Grade Three, etc.

Using concrete objects. The cardinal meaning of the number words can best be developed through the use of concrete objects. For example, the teacher may place one chair in the front of the room. The children may tell how many chairs there are. Both the *one* and the symbol *1* may be written on the blackboard with a picture of one thing, such as a chair or a house. Then the children may be told that the word *one* means the same thing that the figure *1* means. The words *two* and *three* may be introduced in the same way. Then the three number words may be written on cards.

Matching exercises may be given in which cards are used. For example, the teacher may hold up a card having the word *one, two,* or *three* on it. Children may go to the blackboard and make pictures of as many things as the card indicates. The children who do not go to the blackboard may put on their desks the number of counting objects that the card indicates.

Perhaps there are three turtles, two fish, one plant, one flag, etc., in the room. The children may take turns placing the proper word cards beside such groups of things.

The word cards may be put in a pocket chart or card holder. Beside each word card may be a card showing the symbol and a picture of one, two, or three objects, as the case may be.

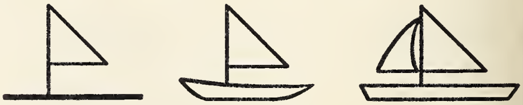
Using Page 92

Have the children count the toys in each picture at the top of the page, and write the number symbol that tells how many toys there are. Point out that the words under the lines mean the same as the numbers they have written.

In the next exercise, have the children read each word and write the symbol for the word.

In the third exercise, have the children draw a line from each number word to a picture that shows that number of toys.

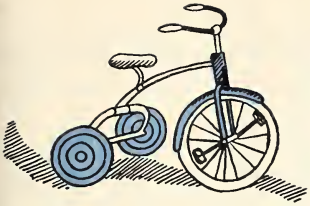
In the last exercise, have the children read each direction and do what it tells them. The boats may be simple line drawings such as these:



Follow-up Activities

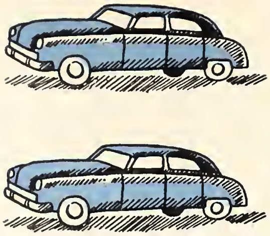
Additional learning helps. If there are any children who need more help with the number words, the activities suggested earlier may be continued. Concrete objects may be used again to develop the meaning of each word. For example, the word *one* may be associated with one book, the word *two* with two books, and the word *three* with three books. The symbols may be associated with the words at the same time by writing at the blackboard the words and symbols, with illustrations. Then matching games may be played with cards that show the words, and cards that show the symbols with illustrations to indicate what the symbols mean.

Enrichment activities. The faster learners may write the number words and the symbols, and make pictures to show what they mean. If they wish, they may make cards for a matching game for the arithmetic table.



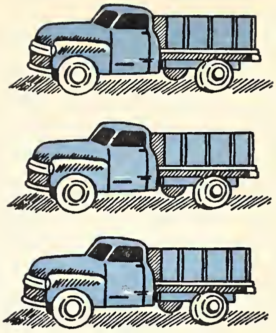
____

one



____

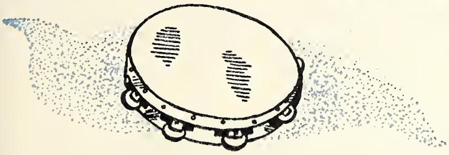
two

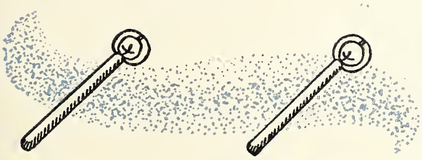


____

three

two ____ one ____ three ____

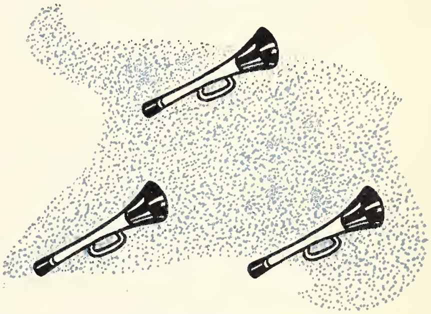




one

two

three



Draw one boat.

Draw three boats.

Draw two boats.

WRITING THE NUMBERS TO 50

Preparatory Activities

The children may now practise writing the numbers in sequence to 50 to maintain their skill. Their understanding of numbers may be extended by having them write the even numbers from 32 to 50, since they have already written them from 2 to 20, and from 22 to 40. The words *one, two,* and *three,* which were recently introduced, may be used again. The material for these experiences is provided on page 93.

Writing at the blackboard. Before the children use the exercise in their books, the teacher will wish to make sure that they remember both the number sequence and how to form the figures legibly and correctly. Several children may work at the blackboard at one time. They may write the numbers to 50 in columns of ten. Perhaps the children at their desks can practise counting concrete objects to 50 at this time. When it is their turn to write at the blackboard, the other children may count.

As the children write, the teacher will observe and help any child who has difficulty either in writing the numbers or in number sequence. If necessary, models to be traced may be provided for some children. The number charts may be used to help any child who misses a number in sequence or does not know which number or decade comes next.

When the children are sure of the number sequence, the teacher may write the odd numbers to 29 on the blackboard, leaving space for the even numbers to be written. The children may write the missing numbers. Then the even numbers to 30 may be written on the blackboard, with space for the children to write the odd numbers.

Using Page 93

Show the children that they are to write the numbers down the page from 1 to 10, then from 11 to 20, and so on, to 50. They may trace the models and write the other numbers, making them about the same size.

Call attention to the columns in which some of the numbers are left out. Help the children discover that the first missing number is *32* and the last, *50.* Tell them to write the missing numbers in the squares that have no numbers.

Have the children read the number words at the bottom of the page. Then have them write the number symbol for each word.

Follow-up Activities

Additional learning helps. If there are any children who need more help with the number sequence to 50, or with writing the numbers legibly and accurately, the teacher will wish to provide the help at this time. Presently the numbers to 100 will be introduced. The children will not be ready for that learning step unless they can count rationally to 50, read the numbers to 50, and understand the number sequence to 50.

If number sequence needs to be redeveloped for some children, the illustrated chart which was made earlier may be used for rational counting to get the sequence in mind. The children's small counting objects may be used also for practice in rational counting to 50. Then the chart showing the numbers to 50, which also was made earlier, may be read again. The children should have more practice in writing the numbers in sequence after they have used these charts.

If the problem is in writing the symbols, experience in tracing models of the difficult numbers at the blackboard may be helpful to individual children. Then the children may try again to write the numbers.

Enrichment activities. Perhaps the faster learners will be interested in using the counting sticks in bundles of ten along with single sticks to illustrate numbers. For example, 4 bundles and 2 sticks may be used to illustrate the number *42.*

1	11			
10				

31	41
33	43
35	45
37	47
39	49

three ______ one ______ two ______

UNDERSTANDING THE MEANING OF TWO-PLACE NUMBERS

Preparatory Activities

A maintenance exercise is provided on page 94 of the pupil's book which will enable the children to maintain and extend their understanding of two-place numbers. They find by counting how many there are in pictures which show boxes of ten objects and additional single objects.

Using concrete objects. The children will understand the exercise in their books more easily if they are given some experience with concrete objects before they attempt to use it. Books may be put in stacks of ten for this purpose. Place on the table 2 stacks of books and 4 extra books. Have the children find that there are 10 books in each stack. Then let them count by tens and ones to find how many books there are. They may write the number on the blackboard.

Then use 3 stacks of books and 7 extra books following the same procedure.

If a picture frame or box lid and counting cubes or squares of cardboard are available, they may be used for similar counting experiences. For example: One row of 10 objects and 6 extra objects may be put into the picture frame and counted. Then 2 rows of ten and 4 extra objects may be counted, and so on, to 4 rows of ten and as many as 9 extra objects. Finally 5 rows of ten may be counted.

Each child may be asked to place on his desk 2 bundles of ten sticks and 8 extra sticks. He may then find how many sticks there are by counting by tens and ones. He may write the number. Then he may place on his desk 3 bundles of ten sticks and 5 extra sticks, and find how many there are, and so on. If counting sticks are not available, the children may use their counting objects in rows of ten each.

Using Page 94

Help the children identify the party favors and discover that there are 10 in each box on the page. Have them count the favors in the boxes as tens, and the extra favors as ones. They may write the number that tells how many favors are in each picture.

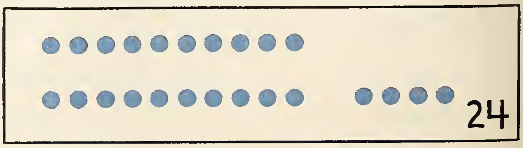
Follow-up Activities

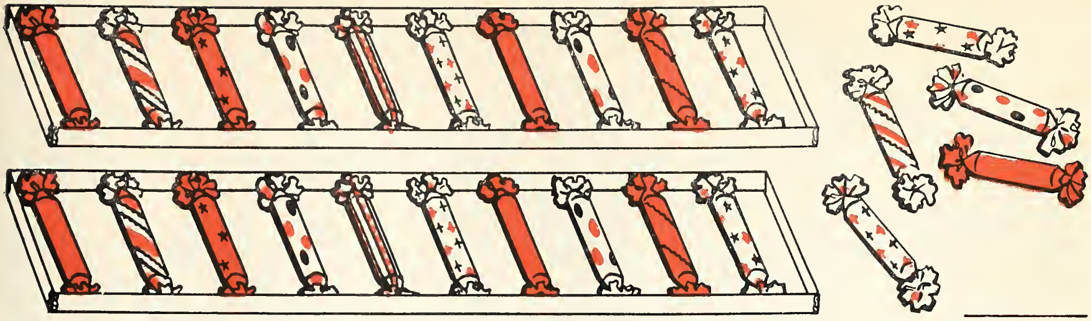
Additional learning helps. If some of the children need more help with numbers, it will be best to use concrete objects again. Perhaps they can make bundles of ten with sticks. If not, they may arrange their counters in rows of ten. By counting by ones and stacking the tens as they go, they will get the idea of tens and ones. Then they can recount the objects by tens and ones. For example, have each child who needs the experience count 10 objects and make a pile of them. Then have him count to 20 and make another pile. Next have him count 6 extra sticks and say, "26." He may now count, "10, 20, 21," and so on, to 26.

This experience may be repeated with the illustrated chart. The teacher may cover part of the chart and have the children count first by ones to the place where it is covered—to 37, for example. Then they may count again by tens and ones to 37.

These children will profit from making cards to show numbers such as *16*, *29*, *30*, *34*, and *48*. Square-ruled paper may be used. The child colors rows of ten and extra squares to illustrate the number.

Enrichment activities. The faster learners may use some of the matching games, the fraction charts, the clocks, or the toy money at the arithmetic table at this time. If they wish, they may make pictures to illustrate numbers. Simple line drawings such as the following may be used for this purpose:





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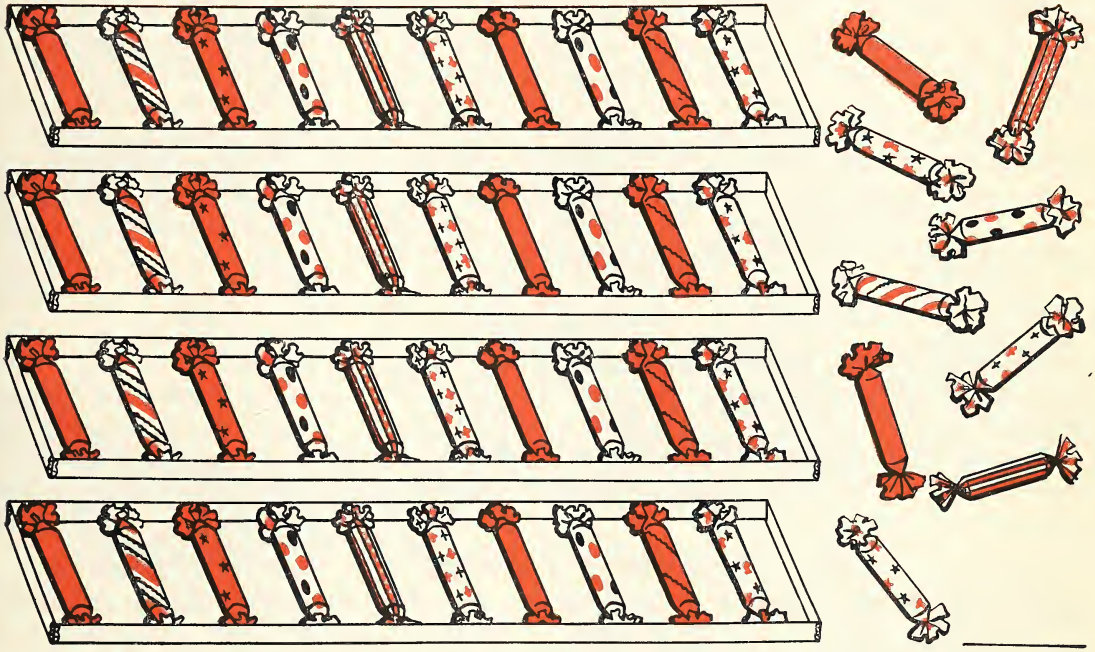

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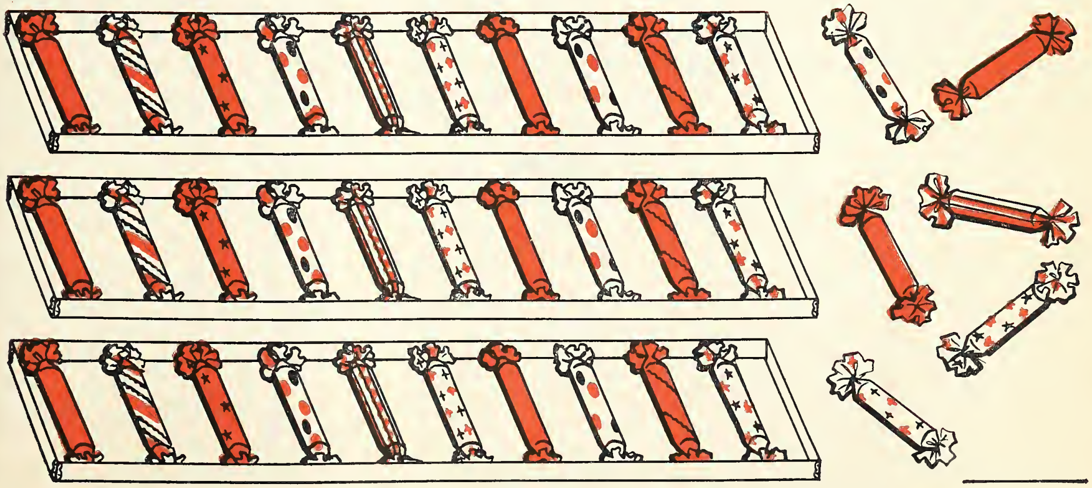


____

SEEING 5 AND 1 AND A GROUP OF 6

Preparatory Activities

Page 95 of the pupil's book provides an exercise in seeing that subgroups of 5 and 1, or 1 and 5, make up a group of 6. These experiences prepare the children for the introduction of the addition facts which the groups parallel.

Using informal arrangements. If realistic classroom activities lend themselves to the introduction of these subgroups of 6, they should be used. If not, the teacher may arrange informal groups for the children to observe.

For example, have 5 boys working at the arithmetic table and 1 boy arranging the books near by. In another part of the room, have 1 girl drawing a picture and 5 girls playing a game. Then ask these questions:

How many boys are there at the arithmetic table? How many boys are working with the books? How many boys are there in the whole group?

How many girls are drawing? How many girls are playing a game? How many girls are there in the whole group?

Using patterned arrangements. Each child may use his counting objects to make these patterned arrangements. The teacher may give these directions:

Place 5 counters on the desk. Place 1 more counter below them. How many counters are there?

Place 1 more counter on the desk. Place 5 more counters below it. How many counters are there?

Using Page 95

Help the children identify the plums. Then ask the following questions for each picture:

How many plums are on the plate? How many are off the plate? How many plums are there in this picture?

Have the children write the total number.

In the next exercise, have the children follow the directions and write the number of balls they drew each time.

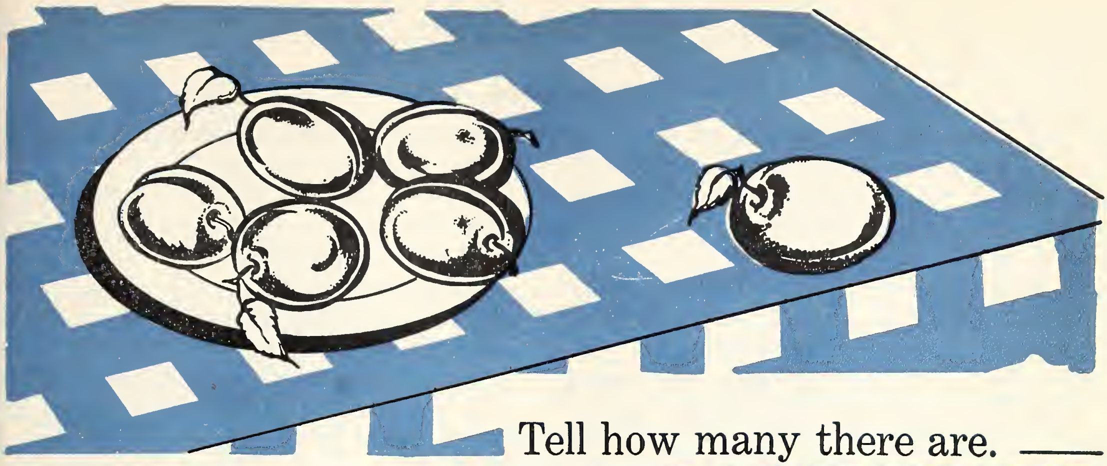
Follow-up Activities

Additional learning helps. If some of the children need more experiences with the subgroups of 6, follow again the suggestions for preparatory activities.

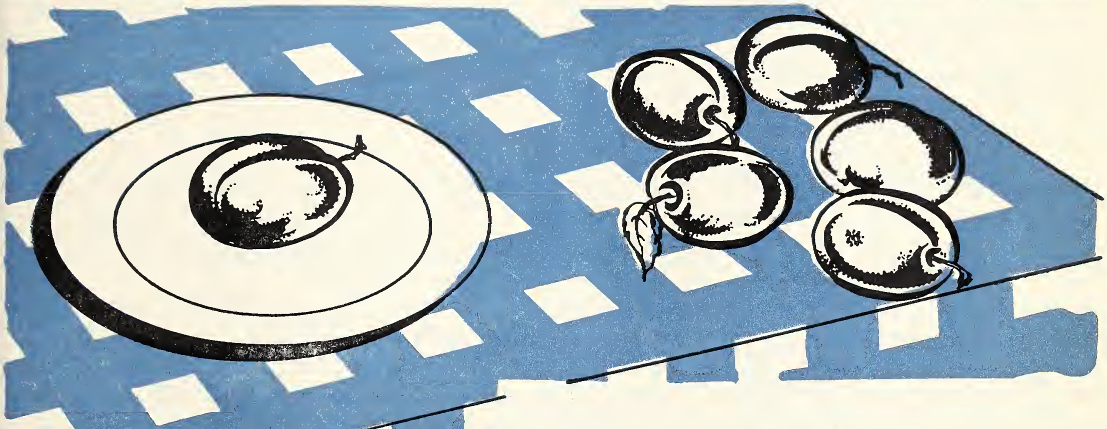
These children may wish to make pictures to show the subgroups, as suggested on page 114.

Enrichment activities. The faster learners may make pictures showing the subgroups of 6 for the arithmetic table. Some of the children may be interested in arranging the cards by the size of groups, with all of the cards showing groups of 3 together, those showing groups of 4 together, etc.

Notes

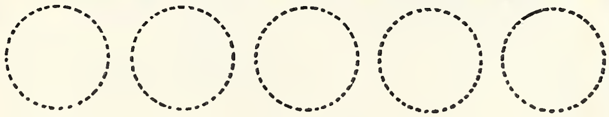


Tell how many there are. ____



Tell how many there are. ____

Draw 5 balls.



Draw 1 ball.

____

Draw 1 ball.

Draw 5 balls.

____

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

The addition facts 5 and 1 are 6, and 1 and 5 are 6, are introduced on page 96 of the pupil's book. Pictures which illustrate oral number stories and show the answers for the questions are provided.

Using dramatization. The children may be told number stories which use the new facts. They may dramatize the stories and discover the facts. It may be that classroom activities will lend themselves to these stories. If not, such stories as the following will serve the desired purpose:

One day 5 cowboys were building a corral. One more cowboy came to help. Then how many cowboys were building the corral? How many are 5 cowboys and 1 cowboy?

One girl was cleaning the cabin. Five more girls came to help. How many girls were cleaning the cabin then? How many are 1 girl and 5 girls?

Using concrete objects. The children may use their counting objects to discover the facts. These directions may be given:

Put 5 counters on the desk. Put 1 more counter near them. Put the counters together. How many are 5 counters and 1 counter?

Put 1 more counter on the desk. Put 5 more near them. Put the counters together. How many are 1 counter and 5 counters?

Using Page 96

Help the children discover that two kinds of birds are shown on the page. Since the drawings are of the actual birds, those at the top of the page may be identified as cardinals, and those at the bottom of the page as tanagers.

Explain that the pictures at the top of the page tell the following number story and show the answer for the question in the story:

One day Bob saw 5 birds at the birds' feeding station. Soon 1 more bird came. How many birds were at the feeding station then?

Have the children read the illustrated fact, "5 birds and 1 bird are 6 birds," and write the answer.

Tell the following number story for the next pictures:

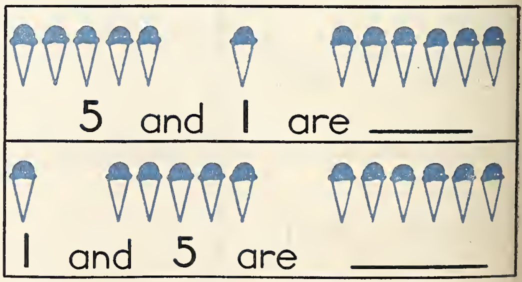
Alice saw 1 bird at the birdbath. Then 5 more birds came to take a bath. How many birds were at the birdbath in all?

Have the children read the illustrated fact, "1 bird and 5 birds are 6 birds," and write the answer.

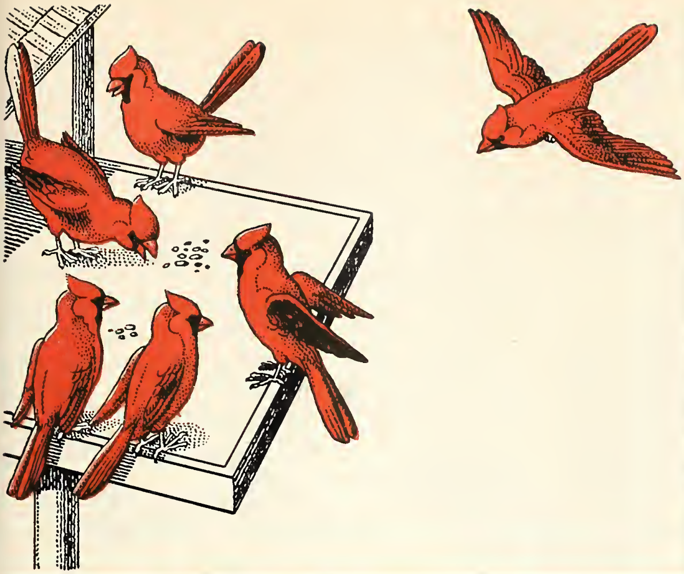
Follow-up Activities

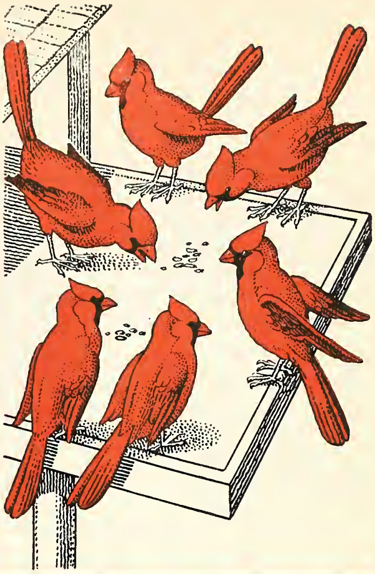
Additional learning helps. If the slower learners need more help in learning the new addition facts, the teacher may help them make up number stories that use the facts. Then they may dramatize the stories. The children may build the facts again with their counting objects. Then they may say the facts three or four times.

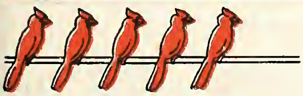
These children will probably need to study the facts again later. It will be helpful to have each of them make an illustrated fact card. The plan shown here may be followed, or the children may use drawings of other objects. A number of models are shown on page 162.

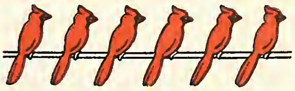


Enrichment activities. The faster learners may find in magazines pictures that illustrate the new facts from which they may tell number stories. These pictures may be kept on the arithmetic table.

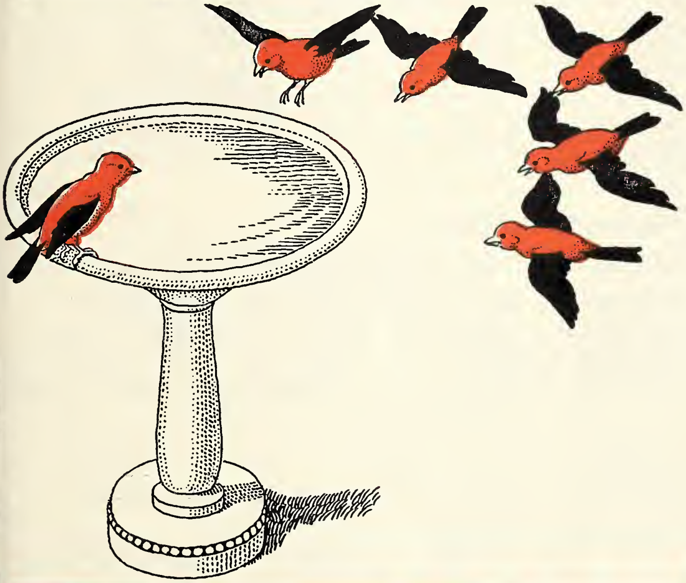


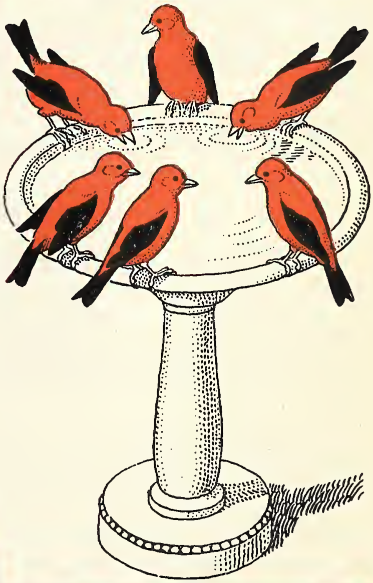


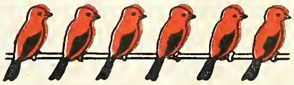




5 and 1 are ____







1 and 5 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The children will now use the two new facts in number stories and learn to write them in vertical form. These facts will also be used in examples, together with other facts that were learned previously.

Using dramatization. The children may be given number stories which use the new facts. The stories may be dramatized, but the dramatization should be stopped before the action is completed. This will help the children learn how to use the addition facts to find the answers. These stories, or similar stories, may be told:

One day James was building a bridge. He used 5 boards. Then he brought 1 more board for the bridge. How many boards did he use in all? How many are 5 boards and 1 board?

Judy was putting flowers in the vase. She put 1 flower in the vase. Then she put in 5 more flowers. How many flowers did Judy put in the vase in all? How many are 1 flower and 5 flowers?

Using Page 97

The teacher will help the children identify the words *trees* and *cakes*. The pictures will help them recognize the words.

Explain to the children that the picture tells this number story, and that they must think of the answer for the question in the story as the story is told:

One day Fred planted 5 trees. Then he brought 1 more tree to plant. How many trees did Fred plant in all?

Have the children read the question and say the answer. Then have them trace the numbers in the example, write the answer, and read the addition fact.

Tell this story for the second picture:

There was 1 cupcake on the table. Ann brought 5 more cakes to the table. How many cakes were on the table then?

Have the children read the question and say the answer. Then have them trace the numbers in the example, write the answer, and read the addition fact.

Have the children read the direction above the examples and do what it tells them.

Follow-up Activities

Additional learning helps. If some children had difficulty with the number stories, they may dramatize them and find the answers. Then they may make up other number stories that use the new facts, and dramatize them.

Since these children will probably need to study the addition facts from time to time, it will be helpful to them to have study and practice cards for the new facts. These may be made by the faster learners.

If some children had difficulty with the examples, the teacher will wish to find which addition facts they do not know. The children may use their illustrated fact cards (see page 210) and the group cards to learn these facts. Then they may build the facts again with their counting objects.

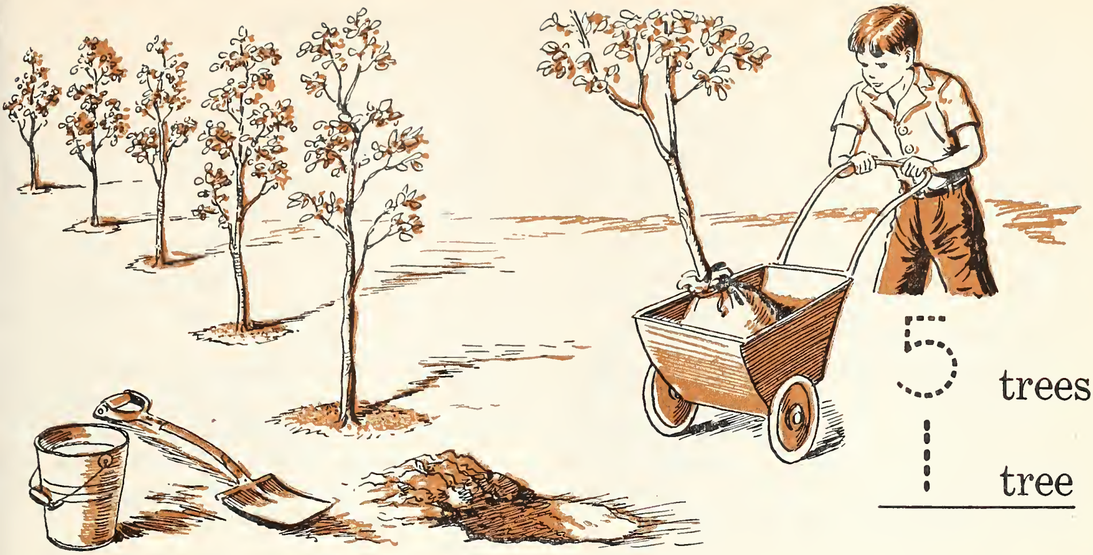
Enrichment activities. The children who did not have difficulty with page 97 may make study and practice cards for the arithmetic table. They may use their own ideas for the cards, or they may use the ideas suggested below:

Front

5 dogs   1 dog
1 dog   5 dogs
__dogs   __dogs

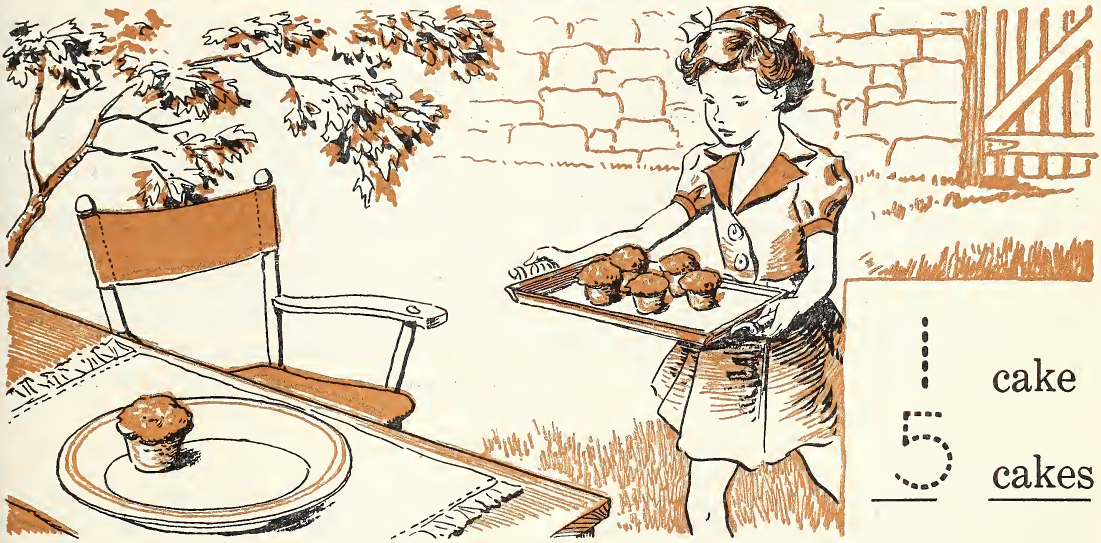
Back

5 dogs   1 dog
1 dog   5 dogs
6 dogs   6 dogs



5 trees
1 tree

How many are 5 trees and 1 tree? ____ trees



1 cake
5 cakes

How many are 1 cake and 5 cakes? ____ cakes

Tell how many there are in all.

5 kittens	3 pigs	3 hens	1 dog
1 kitten	3 pigs	2 hens	5 dogs
____kittens	____pigs	____hens	____dogs

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

The children may now have the next exercise in learning how to solve problems. On page 98 pictures are provided which illustrate oral number stories. The teacher tells the stories and the children write the answers to the questions in the stories. Examples which use some of the addition facts that have been learned are provided also.

Using dramatization. Before the children use the material in their books, they may have practice in dramatizing number stories and writing the answers. The dramatizations should be stopped before the answers are shown. These stories may be used:

One day the boys were moving their blocks with wagons. John had 1 wagon. Then Fred and Tom came with 2 wagons. How many wagons did the boys use?

Three girls were playing with their dolls on the lawn. Three more girls brought their dolls to play. How many girls were playing then?

One boy was playing in a tree house. Then 4 more boys came to play. How many boys were playing in the tree house?

Two girls were picking flowers in a field. Three more girls came to help. How many girls were picking flowers then?

Using Page 98

The pictures may be used to help the children learn to recognize the words *toys*, *children*, and *pets*. These words have not been used in arithmetic before, but the children have probably encountered them in their experiences in reading.

The children may study the pictures while the teacher tells the stories. Then they may find and write the answers. These stories may be told:

David is getting ready to play with his toys. He has 5 toys on the shelf. He is bringing 1 more toy. How many toys will David have to play with?

Three boys are climbing on a jungle gym. Two girls are coming to play. How many children will be on the jungle gym when the girls get there?

Four kittens are playing together. One friendly puppy is coming to join in the fun. How many pets will be playing when the puppy gets there?

One rabbit is hiding in the farmer's wheelbarrow. Five more rabbits are coming to get into the wheelbarrow. Then how many rabbits will there be in the wheelbarrow?

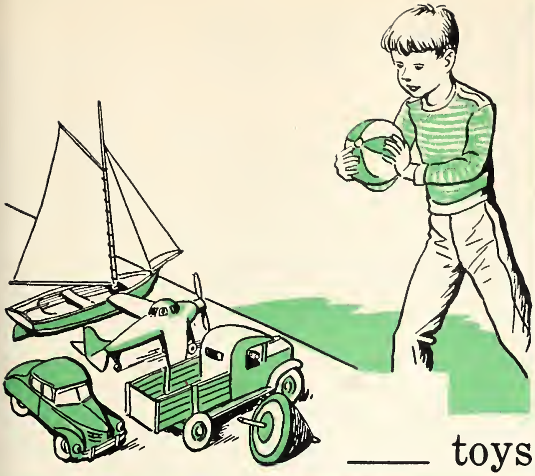
Have the children read the direction above the examples and do what it tells them.

Follow-up Activities

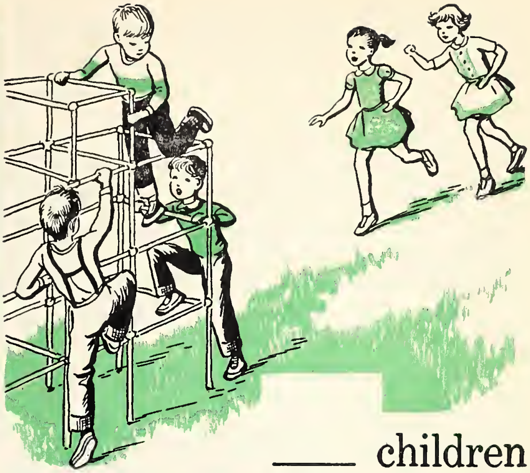
Additional learning helps. If there are any children who had difficulty with the number stories, they may be given more experiences such as those suggested as preparatory activities. At first, when stories are dramatized, the dramatization may be completed so that the answer can actually be seen. Then, as more stories are dramatized, the dramatization may be stopped before the answer is shown. In this way the children may learn to think about the situation, and find the answer by adding. After the children have dramatized several stories, they may try again to do the stories in their books.

If there are any children who did not know some of the addition facts, they may use, to learn the facts they missed, the study and practice cards that are kept on the arithmetic table. Then they may build the facts with their counting objects at their desks and say the facts three or four times.

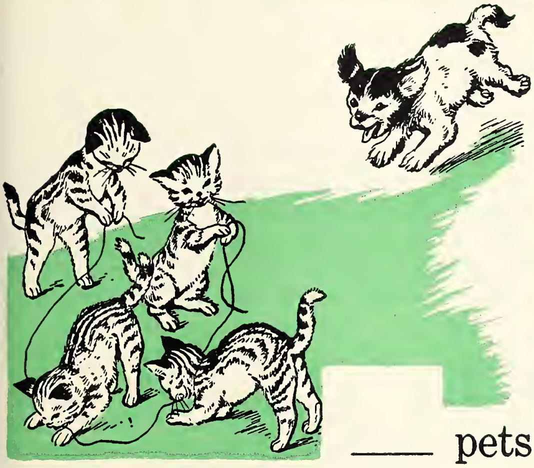
Enrichment activities. The faster learners may make up number stories from pictures in magazines. If they wish, they may make and illustrate their own number stories. If they do this, they may be given a list of facts which have already been learned to use in the stories.



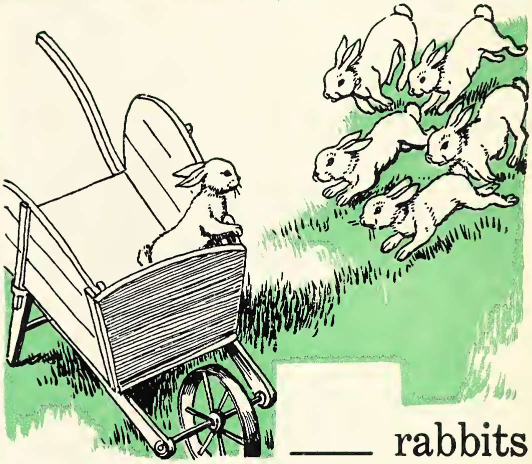
____ toys



____ children



____ pets



____ rabbits

Tell how many there are in all.

3 dogs	1 hen	5 cows	1 pony
3 dogs	2 hens	1 cow	4 ponies
____dogs	____hens	____cows	____ponies

3 pets	1 pig	1 duck	2 kittens
1 pet	5 pigs	1 duck	3 kittens
____pets	____pigs	____ducks	____kittens

LEARNING ABOUT QUARTERS AND HALF DOLLARS

Preparatory Activities

The children may now learn to recognize the quarter and the half dollar and develop further the understanding of relationships among the coins. They may also count by fives to 25 and by tens to 50, using pennies, nickels, and dimes as the objects to be counted. Page 99 provides the material for these learning steps.

Counting coins. The children may be shown a quarter and a half dollar and asked to name them. Then real coins or toy money may be used to develop an understanding of the value of the coins.

Place beside a quarter 5 stacks of pennies with 5 in each stack. Tell the children that the quarter is as much money as the pennies. Have them count the pennies by fives to find how many there are. Explain that a quarter is sometimes called a twenty-five-cent piece because it is as much money as 25 cents, or pennies.

Then place 5 nickels beside another quarter. Tell the children that the quarter is as much money as the nickels. Have them count the nickels to find how many there are. Review again the fact that a quarter is as much money as 25 cents, or pennies, and as much money as 5 nickels.

Place beside a half dollar 5 stacks of pennies with 10 in each stack. Tell the children that the half dollar is as much money as the pennies. Have them count the pennies by tens to find how many there are. Explain that a half dollar is also called a fifty-cent piece because it will buy as much as 50 cents, or pennies.

Place 5 dimes beside another half dollar. Explain that the half dollar is as much money as the dimes. Have the children count the dimes to find out how many there are.

Then place 2 quarters beside a half dollar. Explain that the half dollar is as much money as the quarters. Let the children tell how many quarters there are. Review the fact that a half dollar is as much money as 50 cents or pennies, 5 dimes, or 2 quarters.

Using Page 99

Help the children identify the quarter. Tell them that the quarter is as much money as the pennies. Have them count the pennies by fives to find how many there are, and trace the numbers as they say them. Then ask, "How many pennies did you count?" Have them write the number of pennies that are as much money as a quarter.

Explain that a quarter is as much money as the nickels. Have the children count the nickels and write the number. Ask, "A quarter is as much money as how many nickels?"

Tell the children that a half dollar is as much money as the pennies. Have them count the pennies by tens, trace the numbers as they say them, and write the number of pennies that are as much money as a half dollar.

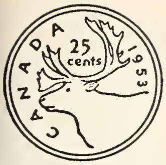
Explain that a half dollar is as much money as the dimes. Have the children count the dimes and write the number. Then ask, "A half dollar is as much money as how many dimes?"

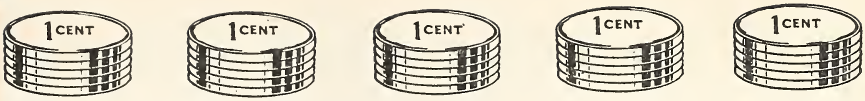
Tell the children that a half dollar is as much money as the quarters. Have them write the number of quarters. Then ask, "A half dollar is as much money as how many quarters?"

Follow-up Activities

Additional learning helps. If some of the children had difficulty with page 99, they may be given more experiences with money such as those suggested as preparatory activities for the page.

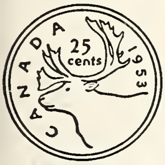
Enrichment activities. The faster learners may enjoy playing bank. They may exchange pennies for quarters or half dollars, nickels for quarters, dimes for half dollars, or quarters for half dollars.

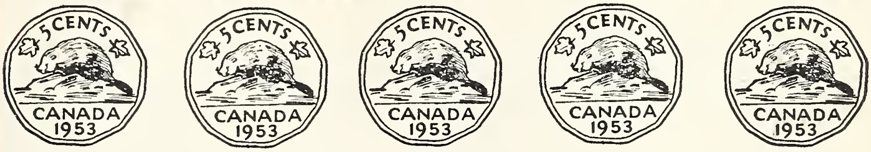




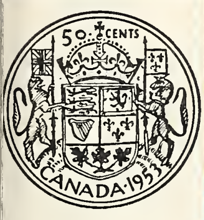
5 10 15 20 25

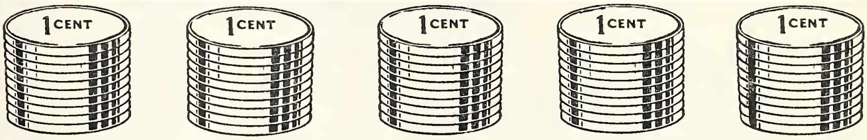
How many? ______





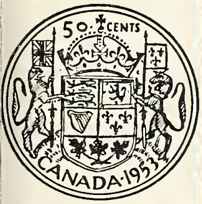
How many? ______

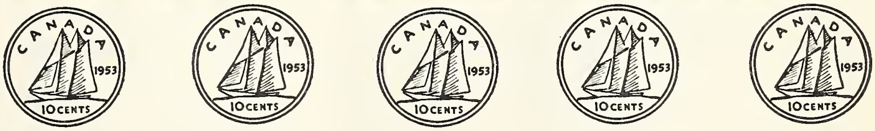




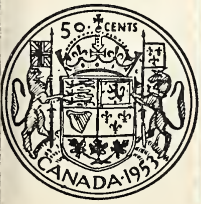
10 20 30 40 50

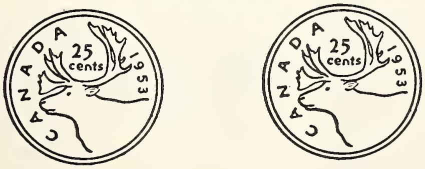
How many? ______





How many? ______





How-many? ______

UNDERSTANDING THE RELATIONSHIPS AMONG COINS

Preparatory Activities

The next learning step for the children is to understand more fully the relationships between nickels and quarters, dimes and half dollars, and quarters and half dollars. An exercise for this purpose is provided on page 100 of the pupil's book.

Using realistic experiences. The teacher may ask the children to name things they can see in the classroom that cost 5 cents, 10 cents, 25 cents, and 50 cents. Then she may let the children pretend to buy these things with toy money. For example, she may use coins and concrete objects to carry out the following exercises:

A pencil costs 5 cents. Ask how many can be bought for 1 nickel, for 2 nickels, for 3 nickels, for 4 nickels, for 5 nickels. Develop the idea that 5 pencils can be bought for 1 quarter.

A ruler costs 10 cents. Ask how many can be bought for 1 dime, for 2 dimes, for 3 dimes, for 4 dimes, for 5 dimes. Develop the idea that 5 rulers can be bought for 1 half dollar.

A notebook cover costs 25 cents. Ask how many can be bought for 1 quarter, for 2 quarters. Develop the idea that 2 covers can be bought for 1 half dollar.

A pencil box costs 50 cents. Ask how many half dollars will be needed to buy a box. Then ask how many quarters will be needed; how many dimes; how many pennies.

Using Page 100

Help the children discover that 1 apple costs 1 nickel. Ask how many apples the 5 nickels will buy. Have the children write the number of apples.

Have the children draw apples to show how many a quarter will buy. Have them write the number of apples.

Develop the idea that a dime will buy 1 popsicle. Ask how many popsicles the 5 dimes will buy. Have them write the number.

Have the children draw popsicles to show how many a half dollar will buy. Have them write the number of popsicles.

Develop the idea that a quarter will buy 1 boat. Have the children write the number that tells how many such boats 2 quarters will buy.

Then have the children draw boats to show how many a half dollar will buy. Have them write the number of boats.

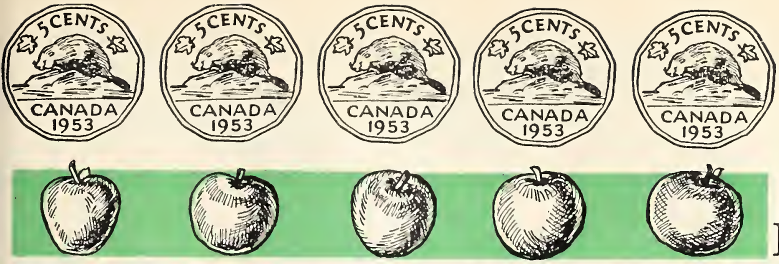
Follow-up Activities

Additional learning helps. If some of the children need more help in understanding the value of coins and the relationships among them, the teacher will wish to determine the specific things each individual does not understand, and then give whatever help is needed.

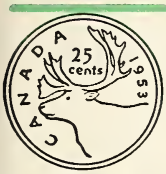
Those children who do not understand the value of coins may be helped by working with pennies and make-believe things that cost a penny—for example, make-believe stamps, or chewing gum, or candy. By building up objects and pennies to 25, the children will see that a quarter is as much money as 25 pennies, or cents, and that it will buy as much. The value of the half dollar can be demonstrated in the same way.

When the basic understandings have been developed, the relationships among pennies, nickels, dimes, quarters, and half dollars can be developed through the use of the coins and real or imaginary objects priced at 1 cent, 5 cents, 10 cents, and 25 cents. The plan suggested for preparatory activities may be followed.

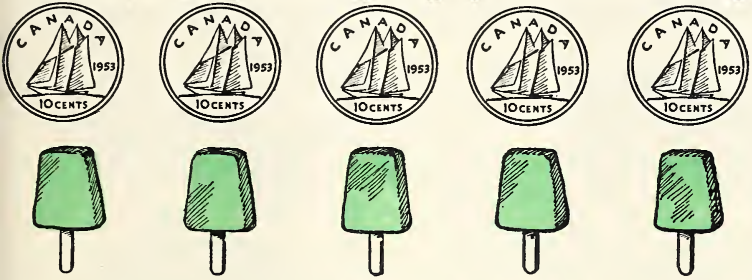
Enrichment activities. The children who do not need help at this time may find, or make, pictures of things that cost a penny, a nickel, a dime, a quarter, and a half dollar. These may be used for a make-believe store. The children may pretend to buy things and pay for them with toy money.



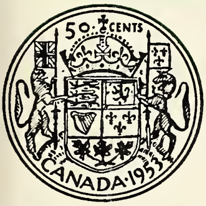
How many? ____



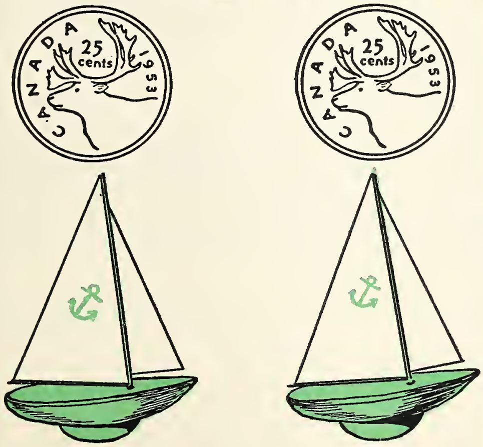
How many? ____



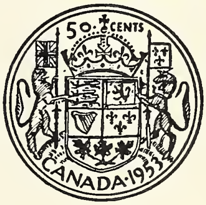
How many? ____



How many? ____



How many? ____



How many? ____

SEEING 4 AND 2 AND A GROUP OF 6

Preparatory Activities

Page 101 of the pupil's book provides experiences in noting that the subgroups 4 and 2 make up a group of 6. These experiences prepare for the introduction of two addition facts.

Using informal arrangements. The teacher may find it possible to use realistic classroom situations to introduce groups of 6 with subgroups of 4 and 2. If children's desks, chairs, plants, pictures, etc., are in evidence in such groupings, they may be used. If not, situations such as the following may be arranged by the teacher:

Place on a table a group of 4 books and another group of 2 larger books. Have 2 of the books open and the others closed. Ask these questions:

How many small books are on the table? How many large books are on the table? How many books are on the table altogether?

How many of the books are open? How many are closed? How many books are there in all?

Rulers, pencils, and toys may also be used to help the children observe the subgroups within a group of 6.

Using patterned arrangements. The children may build the groups with their counting objects while the teacher gives these directions:

Place 4 counters on your desk. Place 2 more counters below them. How many counters are there on your desk?

Place 2 counters on your desk. Place 4 more counters below them. How many counters are there in this group?

Using Page 101

Ask the following three questions about the toy trucks in each of the pictures at the top of the page:

How many trucks are in the box? How many are out of the box? How many trucks are in this picture?

Have the children write the total number of trucks each time.

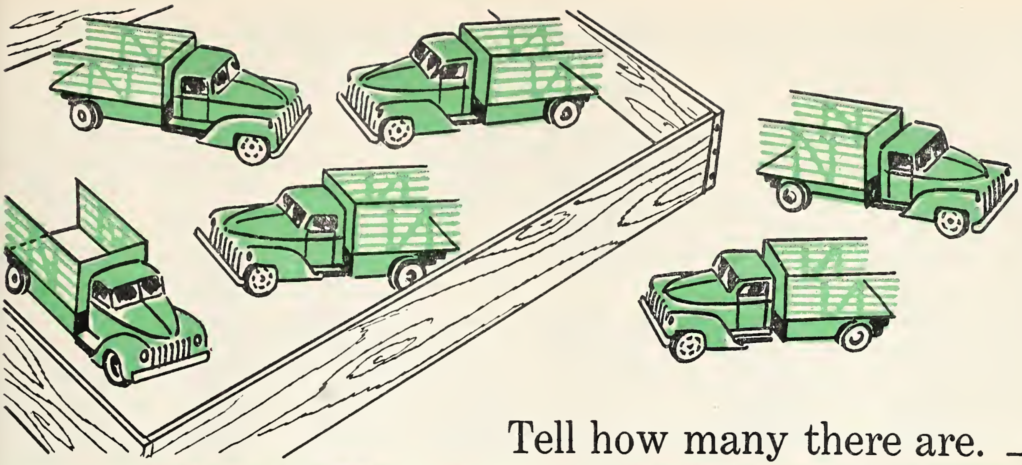
Then have the children read and follow the directions for tracing and drawing balls. They should write the total number of balls each time.

Follow-up Activities

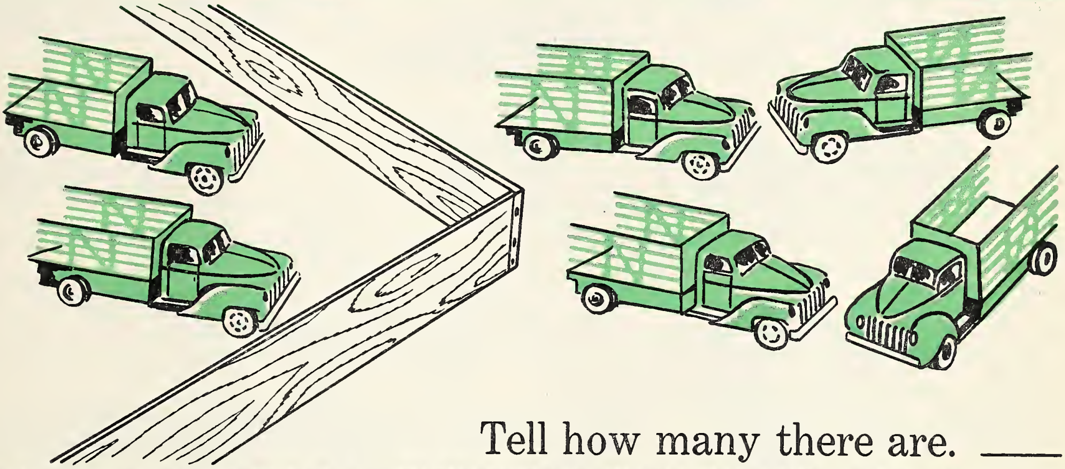
Additional learning helps. Any children who had difficulty may be given more experiences with the subgroups of 6. It will be helpful to have them arrange informal groups of 4 and 2 with large objects. Then they may build the groups again in patterned arrangements with their counting objects. Since these children may have difficulty learning the facts, they should make illustrated cards similar to those on page 114 to show the groups.

Enrichment activities. The children who do not need help may make illustrated cards showing the groups for use on the arithmetic table. They may be able to find in magazines pictures which show groups of 4, 2, and 6.

Notes



Tell how many there are. ___



Tell how many there are. ___

Draw 4 balls. ○ ○ ○ ○

Draw 2 balls.

___

Draw 2 balls.

Draw 4 balls.

___

LEARNING TWO MORE ADDITION FACTS

Preparatory Activities

Two more addition facts, 4 and 2 are 6, and 2 and 4 are 6, are introduced on page 102 of the pupil's book. Pictures which illustrate oral number stories are provided. Then the facts are illustrated again. The children read them and write the answers.

Using dramatization. The children will be able to discover and understand the new facts through the dramatization of such number stories as the following:

One day 4 monkeys were swinging on the bars. Two more monkeys came to swing. How many monkeys were swinging in all? How many are 4 monkeys and 2 monkeys?

Two zebras were resting in their pen. Four more zebras came into the pen to rest. How many zebras were resting then? How many are 2 zebras and 4 zebras?

Using concrete objects. The children may discover the facts again at their desks, using their counting objects. The teacher may give these directions:

Put 4 counters on your desk. Put 2 more counters near them. Now put the counters together. How many are 4 counters and 2 counters?

Put 2 counters on your desk. Put 4 more counters near them. Now put the counters together. How many are 2 counters and 4 counters?

Using Page 102

Help the children identify the animals in the pictures. Then explain to them that the pictures at the top of the page tell this number story and show the answer for the question in the story:

One day 4 brown bears were taking a shower in the zoo. Two more bears came to take a shower. How many bears in all were taking a shower?

Have the children read the illustrated addition fact, "4 bears and 2 bears are 6 bears," and write the answer.

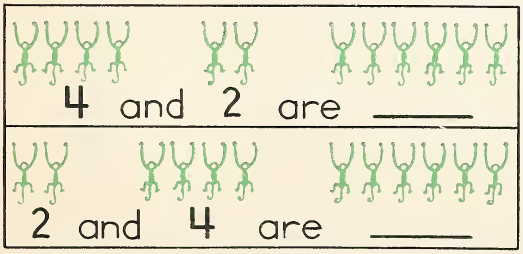
Then tell this number story about the pictures at the bottom of the page:

Two seals were swimming in a pool at the zoo. Four more seals dived into the water to swim. Then how many seals were swimming?

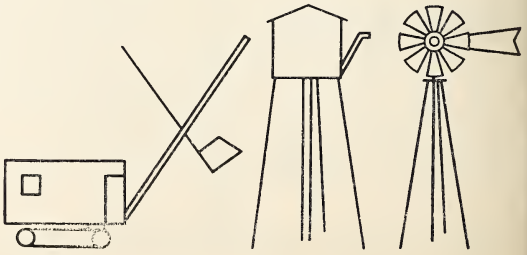
Have the children read the fact, "2 seals and 4 seals are 6 seals," and write the answer.

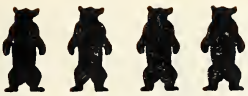
Follow-up Activities

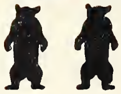
Additional learning helps. The children who need more help with the new facts may dramatize other number stories that use the facts. They may build the facts again with their counting objects, and say them several times. It will help each child to make an illustrated card for each fact. The plan shown below, or a similar one, may be used:

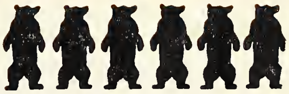


Enrichment activities. The faster learners may wish to sort the cards, putting together those showing facts with sums of 6, those showing facts with sums of 5, etc. Other children may wish to make pictures to illustrate number stories that use the new facts. Simple line drawings, such as those shown below, are appropriate.

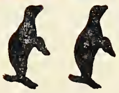


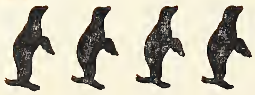


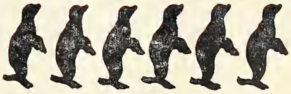




4 and 2 are ____







2 and 4 are ____

USING ADDITION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

On page 103 the children will use the new facts in illustrated number stories which will be told by the teacher. They will write the facts in vertical form in the exercises. Then they will use the new facts in examples, together with some of the facts that were learned previously.

Using dramatization. The children may dramatize number stories which use the new facts. The dramatizations should be stopped before the groups come together, so that the children can add to find the answers. Each fact should be written in vertical form on the blackboard after the story is dramatized. Stories may be based upon classroom situations, or stories such as the following may be used:

One day 4 airplanes were on the landing field at the airport. Then 2 more airplanes landed. How many airplanes were at the airport in all? How many are 4 airplanes and 2 airplanes?

Two motorboats were going around the lake. Four more motorboats came. How many motorboats were on the lake then? How many are 2 boats and 4 boats?

Using Page 103

Help the children identify the first picture as a pet show situation. Explain to them that the picture tells the following number story, and that they are to look at the picture, listen to the story, and think of the answer to the question:

Four boys were at the pet show. Two more boys came with their dogs. How many boys were at the pet show then?

Have the children read the question and say the answer. Then have them trace the numbers in the example and write the answer. After the children have completed the example, have them read the fact.

Then tell this number story:

Two girls were selling lemonade. Four more girls came to help. How many girls were selling lemonade then?

Have the children read the question and say the answer. Then have them trace the numbers in the example, write the answer, and read the fact.

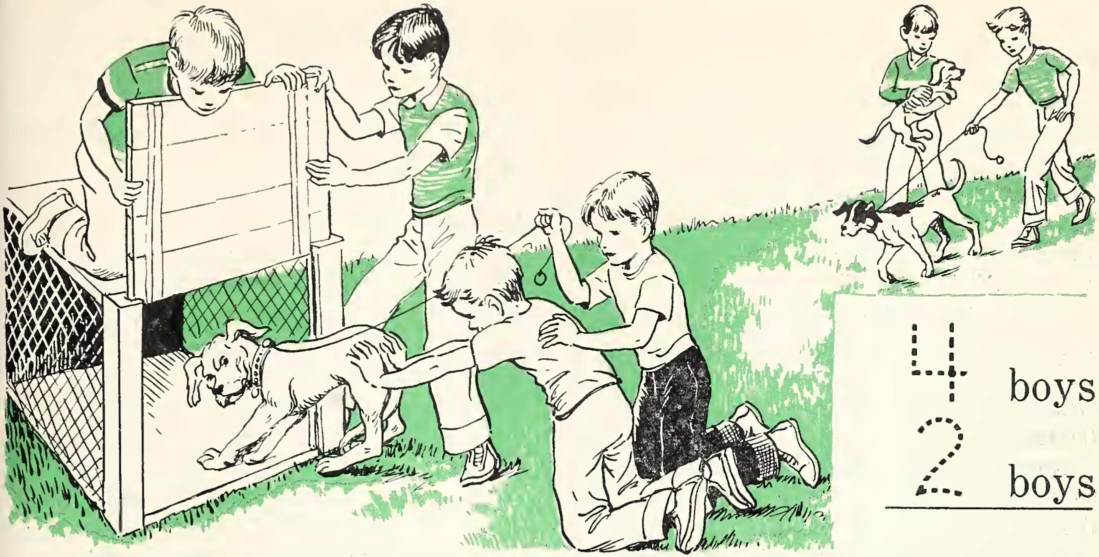
Have the children read the direction above the examples and do as it tells them.

Follow-up Activities

Additional learning helps. The children who had difficulty with the exercises on page 103 may be given help at this time. If they were unable to understand the new facts and use them in number stories, they may dramatize the stories again. Then they may make up similar stories and act them out. Working with their own number stories sometimes helps the children understand other number stories as well.

After the children have dramatized the number stories, they should use their study cards and the illustrated group cards to learn the addition facts they missed. Then they should build the facts again with their counting objects and say each of the facts three or four times.

Enrichment activities. The children who do not need help may make study and practice cards for the new facts similar to those suggested on page 212. These cards may be kept on the arithmetic table.



4 boys

2 boys

How many are 4 boys and 2 boys? ____ boys

2 girls

4 girls

How many are 2 girls and 4 girls? ____ girls

Tell how many there are in all.

2 cakes	2 pigs	2 cows	4 ponies
4 cakes	2 pigs	3 cows	2 ponies
____cakes	____pigs	____cows	____ponies

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

The next exercise planned to help the children develop readiness for problem solving is provided on page 104. Pictures which illustrate oral number stories and examples which use some of the known addition facts are included in the materials.

Using dramatization. The teacher will wish to take this opportunity to help the children visualize, through dramatization, what happens in number stories. The dramatizations should be stopped before the action is completed to give the children the chance to think the groups together – to complete the action in their minds. In this way they can use the addition facts, rather than merely count. The following stories, or similar ones, may be dramatized:

The children made a playground in Fred's backyard. One girl was making a ring to play marbles. Five boys came to help her. How many children worked on the ring?

Three boys were making a tent. Two girls came to help them. How many children worked on the tent?

Two boys were making a corral for a ranch. Four girls came to help them. How many children worked on the corral?

Four girls were making a ranch house. One boy came to help them. How many children worked on the ranch house?

Using Page 104

Explain to the children that each picture tells a number story, and that they are to think of the answer and write it. These stories may be told:

One day some dogs were in a pet show. Four dogs were walking a board. Two more dogs came to walk. How many dogs were walking the board then?

Three kittens were watching for a mouse to come out of a hole. Three more kittens came along. Then how many kittens were watching for the mouse?

Two rabbits were in a basket eating carrots. Three more rabbits came to eat. How many rabbits were eating carrots then?

Five wild ducks were on the water. One more duck flew down to the water. Then how many ducks were on the water?

Have the children read the direction above the examples and do as it tells them.

Follow-up Activities

Additional learning helps. If there are children who had difficulty with page 104, the teacher will wish to work with them to find what caused the trouble.

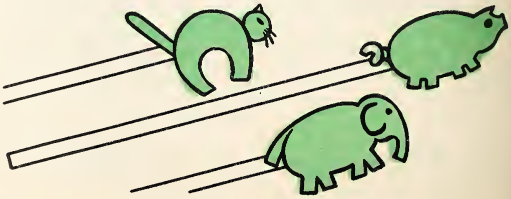
If some children do not understand how to solve problems, the teacher may help them with the stories in their books by asking questions such as these:

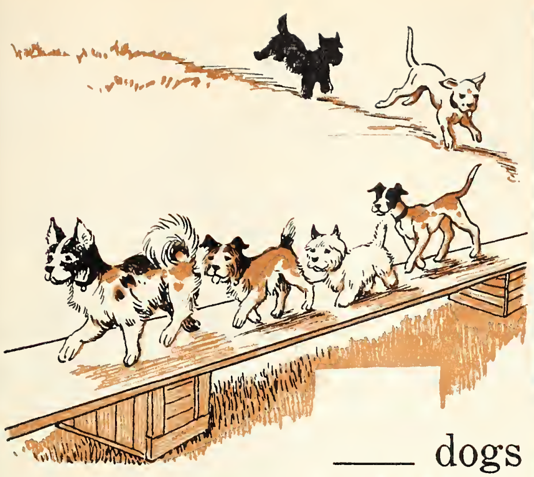
How many dogs are walking? How many dogs are coming? How many will there be when the 2 dogs get there?

Dramatization will help also. For example, the children may pretend their counters are the animals in the stories and dramatize the stories with them.

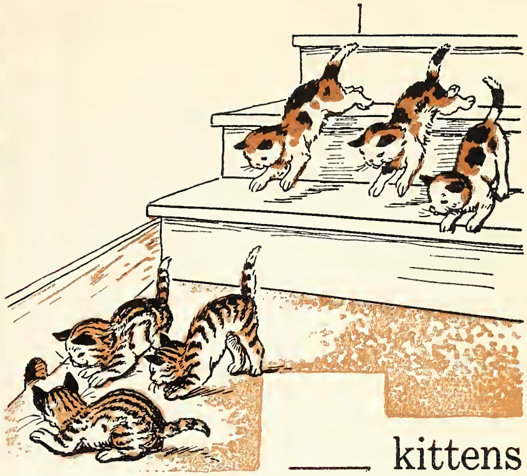
If some children missed addition facts, they may use the illustrated study cards, the group cards, and the study and practice cards to learn the facts they missed.

Enrichment activities. The faster learners may enjoy making paper puppets for number story plays. Animals may be cut from paper and attached to sticks. These may be used to show the numbers and the action. A carton may serve as the stage. The pictures below show how the animals may be made.

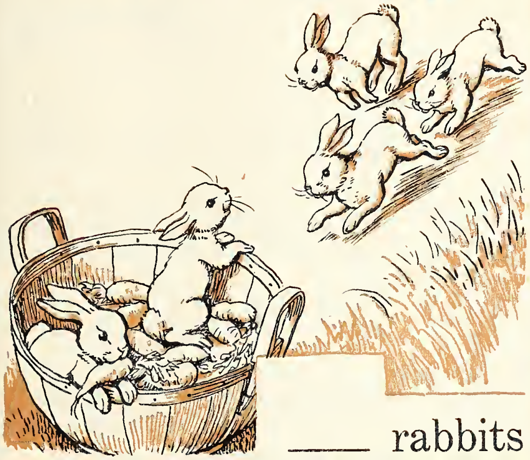




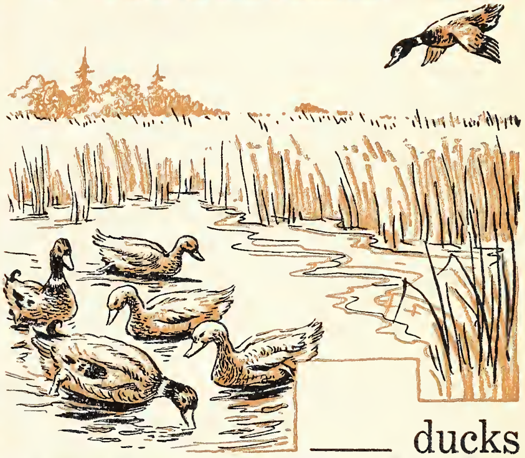
____ dogs



____ kittens



____ rabbits



____ ducks

Tell how many there are in all.

4 boats
2 boats
____boats

5 beds
1 bed
____beds

3 dolls
2 dolls
____dolls

4 airplanes
1 airplane
____airplanes

1 hat
5 hats
____hats

2 balls
1 ball
____balls

2 trains
4 trains
____trains

3 wagons
3 wagons
____wagons

LEARNING TO COUNT TO 100

Preparatory Activities

An understanding of number sequence to 100 may be developed at this time. The children may be taught rational counting to 100 by ones and by tens. Material for these learning steps is provided on page 105 of the pupil's book.

Using concrete objects. The first experiences with numbers to 100 should be with concrete objects. Since the number system can best be learned as a system of tens, it is a good plan to arrange the objects in columns of ten each. They have been arranged in this way previously.

The children have developed an understanding of numbers to 50. They know how to count to 50 by ones and by tens. They should look upon the new experiences as an extension of things already learned.

The children may be asked to place on their desks 5 columns of counting objects with ten in each column. At the same time the teacher will display the chart which was made earlier with 50 pictures in columns of ten each. (See page 170.) If a set of counting cubes or of small pieces of cardboard, or a peg board and pegs are available, these objects may also be used to build the columns of tens to 50. The children may count as they arrange the objects.

After the objects have been arranged to 50, a child may count to 60 as he places the next column of objects; another child may count to 70 as he places the next column of objects; and so on, to 100.

If space was left on the large chart showing the pictures of 50 objects, the chart may now be extended to 100. A child may draw 10 objects in a column (apples, oranges, balls, or whatever was used before) and count from 50 to 60 as he draws; another child may draw objects and count to 70; and so on, to 100.

Several children may have turns counting the pictures or the objects by ones. After they have done this, counting by tens may be extended to 100.

Using Page 105

Let the discussion of the picture bring out the fact that the children and their father are gathering pine cones. Then let the children find by counting a column or two that there are 10 cones in each column. The children may count the cones by ones first, taking turns. One child may count to 20, another from 21 to 40, another from 41 to 60, etc. In this way the teacher will find which of the children need help with rational counting and the number sequence.

When the teacher is sure each child can count by ones, the cones may be counted by tens to 100. The numbers across the bottom of the page may be read. They are the numbers the children said in counting by tens.

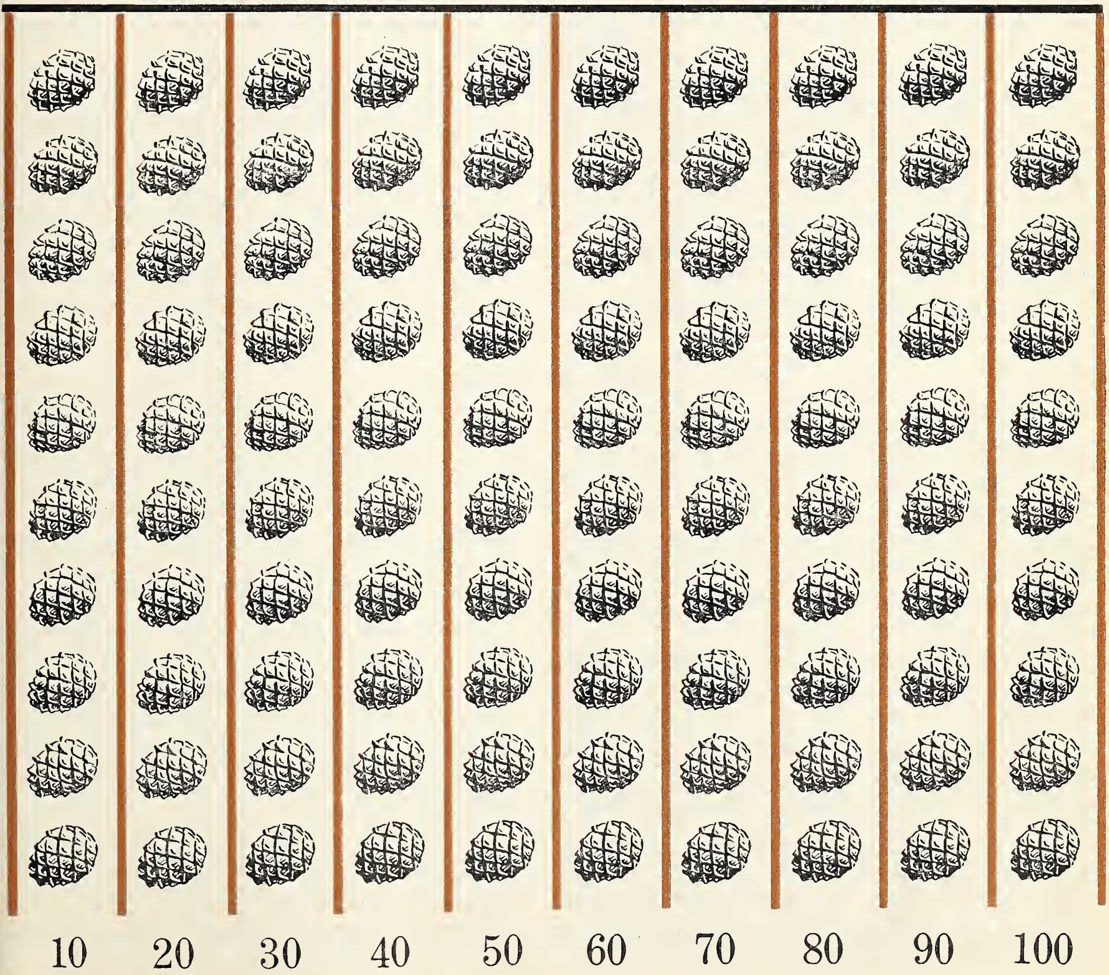
Follow-up Activities

Additional learning helps. If some of the children need more help in counting, they may use counting objects again at their desks, arranging them in columns of ten.

Perhaps some of the children will wish to make illustrated charts. Square-ruled paper with 10 rows of 10 squares each may be provided. The children may make circles, triangles, etc., in the squares, and count as they do so.

These children may be asked to count the toy money to see if there are enough of each coin for use when they learn about the dollar later. They will need 100 pennies, 10 dimes, 4 quarters, and 2 half dollars.

Enrichment activities. Some of the faster learners may be interested in using the counting sticks in bundles of ten to show what some of the numbers from 50 to 100 mean. Others may wish to make charts of 100 small pictures for the arithmetic table or for their arithmetic folders and scrapbooks.


10
20
30
40
50
60
70
80
90
100

READING AND WRITING NUMBERS TO 100

Preparatory Activities

Now that the children have learned to count to 100 and their understanding of the number system as a system of tens has been extended, they may learn to read and write the numbers to 100. Page 106 of the pupil's book provides material for this purpose.

Making a number chart. If space was left on the large chart with the numbers to 50 (See page 170.), the numbers to 100 may be added to it at this time. If not enough space was left, a chart with the numbers 1 to 100 may be made. Wrapping paper or newsprint ruled with 2-inch squares may be used for this purpose. This plan may be followed:

A child may write the numbers 1 to 10 in a column down the left side of the paper; then another child may write the numbers 11 to 20; and so on, to 50. Then the teacher may ask what number comes after 50. As the children say the numbers slowly to 60, a child may write them. The chart may be developed by decades to 100 in this way.

After the chart is completed, experiences in reading the numbers may be given. One child may read the numbers from 50 to 60, another from 60 to 70, etc. Then the children may read the numbers that end in zero, those that end in 5, the even numbers, the odd numbers, the number that comes before and the number that comes after *67*, etc.

Using Page 106

Since the chart at the top of the page is like that made by the children the same types of experience may be given with it. Children may take turns reading the numbers by decades. Then they may read certain specified decades, the even numbers, the odd numbers, the numbers ending in zero, etc.

The children should be told that the model numbers are in the boxes to help them make the numbers the right size and to show them where to begin to write each column of numbers. They may trace the numbers to 10, and then trace the *11* and write the numbers in that column. They trace the other dotted numbers as they come to them in writing the numbers to 100 in sequence by columns.

Follow-up Activities

Additional learning helps. As the teacher worked with the children and looked over their work on page 106, she probably found which children need more help in reading and writing numbers. She may have found also what caused each child's difficulty. The help given will, of course, depend upon the needs of individual children.

If some of the children had trouble reading numbers, it may be that they tend to get poor images of the numbers or to reverse the figures. For example, *79* may look like *97* to some children. The *9* and the *6* may confuse others. It will be helpful to tell the children again that we read numbers from left to right just as we do words. Having them trace over large models of the *9* and the *6* as they say them softly may help them to overcome difficulty with these numbers.

After the difficulties have been corrected, the best way to help children develop further skill in reading numbers is to give them practice. Cards with numbers on them may be used in a game. The cards are shown, one at a time, and a child wins the card if he can say the number that appears on it.

It may help the children to write the numbers in sequence if they are led to see that the numbers in the first row on the chart end in *1*, those in the next row in *2*, and so on, down to *9* and *0*; and that the two-figure numbers in the columns begin with *1*, then *2*, then *3*, and so on.

Enrichment activities. The faster learners may use the toy money to play bank and to buy things in the make-believe store. They may get change for various coins, and pay with the coins for purchases they make.

1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

1	11	21	31	41	51	61	71	81	91
2									
3									
4									
5									
6									
7									
8									
9									
10	20								

LEARNING THE NUMBER WORDS *FOUR, FIVE,* AND *SIX*

Preparatory Activities

Page 107 of the pupil's book provides exercises for introducing the words *four, five,* and *six* as part of the children's reading vocabulary of arithmetic. The exercises also provide maintenance for the words *one, two,* and *three.*

Using realistic situations. The children should be helped to understand that the words are not something new and different, but the same they have been using. The words *four, five,* and *six* may be written on the blackboard and associated with real situations. For example: Most children in Grade One are *six* years old. A few of them may still be *five.* Some children may have brothers or sisters who are *four* years old.

Using the cardinal meaning of the words. The children should associate the number words with the symbols they name and the quantities they represent. This can be done through the use of concrete objects. The following plan is suggested:

Place 4 chairs at the front of the room. Ask how many there are. Then write the symbol *4* and the word *four* on the blackboard, and draw 4 chairs. Do the same with *5* and *6.*

A chart may be made at this time for the number words from *one* to *six.* Keeping such a chart posted for a time on the bulletin board will help the children learn to recognize the words and associate them with the symbols. This form may be used:

1	one	●
2	two	● ●
3	three	● ● ●
4	four	● ● ● ●
5	five	● ● ● ● ●
6	six	● ● ● ● ● ●

Using Page 107

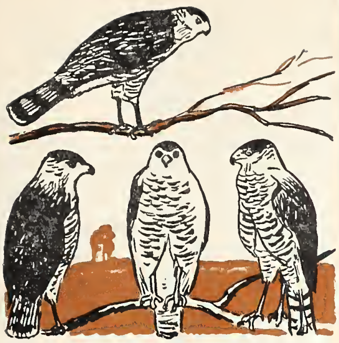
Have the children count the hawks, crows, and owls, and write the symbols in the blanks to tell how many birds are in the pictures. Explain that the words under the lines say and mean the same thing the symbols do.

Have the children identify the beaver and trace the *1* which tells how many beavers there are. Have them count the raccoons, skunks, otters, woodchucks, and opossums, and write the number they counted each time. Then have them trace the dotted line from the word *one* to the picture that shows one animal. Have them draw lines from each of the other number words to the right picture.

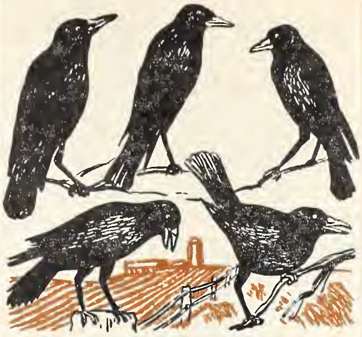
Follow-up Activities

Additional learning helps. If there are any children who had difficulty with page 107, the teacher will wish to help them. Each child may be given six cards. He may write the numbers 1 to 6, one on each card. The teacher will write the number words *one* to *six* on similar cards for each child. Then the child may place a symbol card on his desk, place the proper word card beside it, and place that number of counting objects beside the two matching cards. When the children are quite sure of the words, they may find illustrated group cards among those they made earlier that show groups of from 2 to 6. They may match with each group card the word card that tells how many things are in the group.

Enrichment activities. The faster learners may make number word cards, number symbol cards, and illustrated group cards for the arithmetic table. They can probably write the number words on the cards themselves.



four



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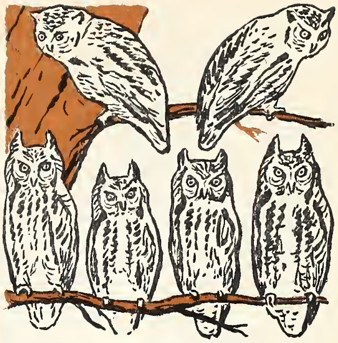

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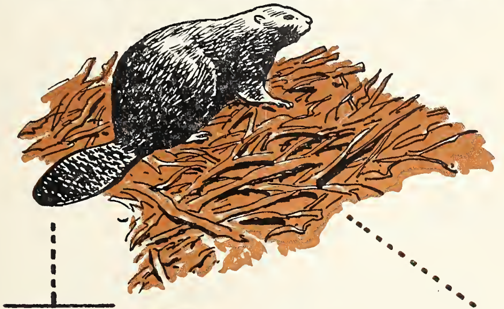
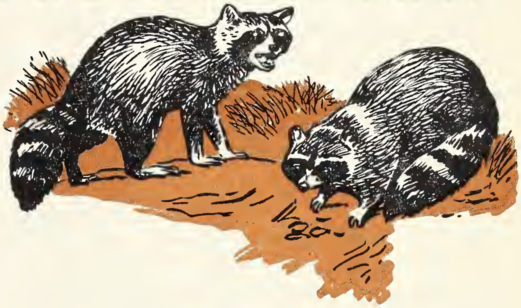




one

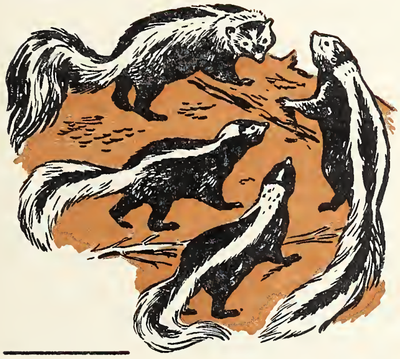
two

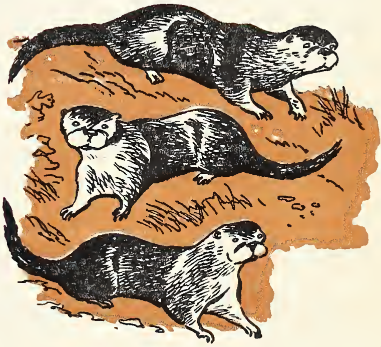
three

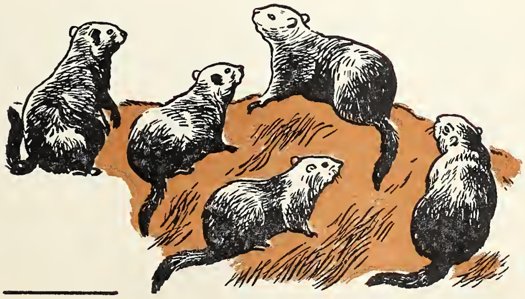
four

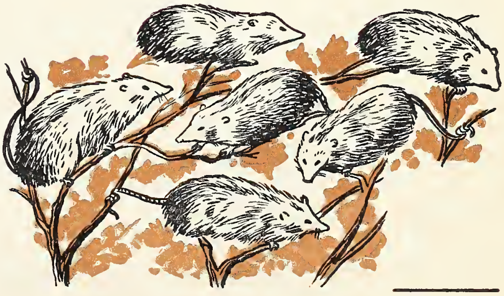
five

six









MAKING SURE OF ADDITION

Preparatory Activities

The seventh in the series of "Making Sure" tests is provided on page 108 of the pupil's book. The test includes two number stories and the 15 addition facts that have been introduced. The test is planned to enable the teacher and the children to find how well the addition facts have been learned.

Since this is a test, and the teacher will wish to study the results to find what help is needed by individual children, no preparation is necessary or desirable. However, the teacher may wish to tell the children that they will now be able to use all of the addition facts they have learned.

Using Page 108

Explain to the children that the first picture tells this number story and that they may think of the answer for the question and write it:

One day 2 hens were scratching in the garden. Four more hens came. How many hens were scratching in the garden then?

Then tell this story while the children study the next picture:

One boy was playing on the slide. Five girls came to slide. How many children were playing on the slide then?

Have the children read the direction above the examples and do as it tells them.

The teacher may observe the children as they work. If she gives help, she will make note of the help needed and take that into account when she studies the test results.

Follow-up Activities

The teacher will wish to find how well the group as a whole did, and which addition facts, if any, need to be retaught. She can do this best by tabulating the responses on a chart such as the following:

$\begin{array}{r}1\\ \underline{1}\\ 2\end{array}$	$\begin{array}{r}1\\ \underline{2}\\ 3\end{array}$	$\begin{array}{r}1\\ \underline{3}\\ 4\end{array}$	$\begin{array}{r}1\\ \underline{4}\\ 5\end{array}$	$\begin{array}{r}1\\ \underline{5}\\ 6\end{array}$
$\begin{array}{r}2\\ \underline{1}\\ 3\end{array}$	$\begin{array}{r}2\\ \underline{2}\\ 4\end{array}$	$\begin{array}{r}2\\ \underline{3}\\ 5\end{array}$	$\begin{array}{r}2\\ \underline{4}\\ 6\end{array}$	
$\begin{array}{r}3\\ \underline{1}\\ 4\end{array}$	$\begin{array}{r}3\\ \underline{2}\\ 5\end{array}$	$\begin{array}{r}3\\ \underline{3}\\ 6\end{array}$		
$\begin{array}{r}4\\ \underline{1}\\ 5\end{array}$	$\begin{array}{r}4\\ \underline{2}\\ 6\end{array}$			
$\begin{array}{r}5\\ \underline{1}\\ 6\end{array}$				

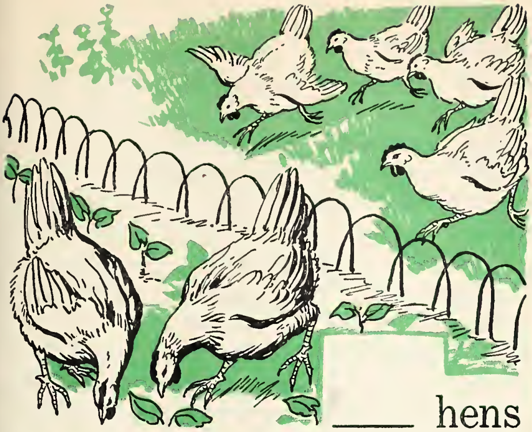
A small tally mark beside the fact each time it is missed will reveal which facts need further attention.

After the group tabulation is made, the teacher will wish to make a similar tabulation for each child. In this way she will be able to find which facts each child has learned and which he has yet to learn.

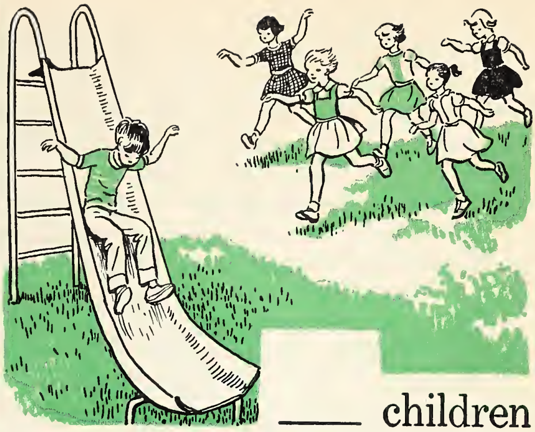
Additional learning helps. If there are children who do not understand the addition process, the teacher will wish to give them another chance to learn before they attempt to do subtraction. The learning procedure which was used in introducing the process may be followed again.

Those children who missed addition facts should be given help in learning them. The children may use the illustrated group cards, the study cards, and the study and practice cards for the specific facts they missed. Then they may build the facts with their counting objects, and say them several times.

Enrichment activities. The faster learners may use the clocks to practise telling time, play bank and store with the toy money, or play some of the matching games.



____ hens



____ children

Tell how many there are in all.

3 hats
1 hat
____hats

4 ducks
2 ducks
____ducks

1 boat
1 boat
____boats

2 dogs
3 dogs
____dogs

5 pets
1 pet
____pets

2 cakes
2 cakes
____cakes

1 doll
4 dolls
____dolls

1 toy
2 toys
____toys

3 pigs
2 pigs
____pigs

1 tree
5 trees
____trees

3 balls
3 balls
____balls

4 beds
1 bed
____beds

2 kittens
4 kittens
____kittens

2 chickens
1 chicken
____chickens

1 airplane
3 airplanes
____airplanes

LEARNING TO SUBTRACT

As a preliminary to the introduction of subtraction, the children have built up a background of experience with numbers and with groups. Early experiences with groups arranged in specific patterns have created a foundation, not only for understanding addition, but also for understanding subtraction. Experiences in combining smaller groups to make larger groups have established the basic combinations with which subtraction, as well as addition, deals. The pupils, then, approach subtraction with a thorough background on which the new concept can be based. However, one additional step preliminary to subtracting remains. The children's experiences with groups have hitherto emphasized discovery of the total number in two subgroups as readiness for addition. Now groups will be examined again from the subtraction standpoint. From this standpoint, the child will start with the total number in the group, and emphasis will be placed on discovery of the subgroups within the total group.

The first-grade program is so planned that the meaning of addition is thoroughly established, and the pupils are made secure in using the process, before subtraction is introduced. When subtraction is presented, the pupils are given every opportunity to understand and use this process also. They stay with it until they become as secure in subtraction as in addition.

When it can be done without creating confusion, the relationship between addition and subtraction will be brought out thoroughly and clearly. The time to emphasize this relationship is not in the first grade, when the concepts of addition and subtraction are being presented for the first time, but in the second grade, after the two processes have been retaught separately, and in subsequent grades.

There is, however, a relationship which can be developed in Grade One and which can be grasped by first-grade children. This is the relationship between pairs of addition facts, such as 3 and 2 are 5, and 2 and 3 are 5. A similar relationship exists between pairs of subtraction facts, such as 4 from 6 is 2, and 2 from 6 is 4. In *Making Sure of Arithmetic*, Grade One, the addition facts are presented in pairs of related facts. The subtraction facts are also presented in pairs of related facts. Groups of four related facts, such as 3 and 2 are 5, 2 and 3 are 5, 3 from 5 is 2, 2 from 5 is 3, are not brought together as a single teaching unit until the second grade.

Although the direct development of the relationship between the two processes is deferred, a high degree of readiness for seeing this relationship is provided for in the program of *Making Sure of Arithmetic*, Grade One. The extensive experiences with concrete and pictured groups, the dramatic and picture-story presentation of both the addition and subtraction facts, and the parallel order of presentation of the pairs of addition and subtraction facts are significant in this readiness program.

In this grade only the subtraction concept of "how many are left" will be developed. Finding how much more and how many more, how much less and how many fewer, how much more is needed, and how many more are needed will not be introduced until Grades Two and Three.

The Basic Steps in Learning to Subtract

The basic steps which are used to help the children learn to subtract are as follows:

(1) The first objective is to develop an understanding of the meaning of subtraction. Realistic situations in story form (problems) are to be used to develop this understanding. As was suggested for addition, the first subtraction situations should be dramatized within the classroom, so that the children can see one of the two smaller groups being removed from the larger group, and can observe the size of the group which remains.

(2) Then the children build the subtraction facts at their desks with their small concrete objects. As they place a group on the desk, remove a smaller group or a single object, and find how many are left, they visualize the subtraction process. This manipulative step is vital to an understanding of the process.

(3) Use is made in the pupil's book of semiconcrete (pictured) materials which illustrate the oral number stories (problems). These action pictures show, and the oral number stories make clear, both the process of subtracting, or separating, and the new facts being introduced. For each new fact there are two illustrations. The first picture, in each case, shows the whole group—the minuend. The second picture shows the subtraction taking place—a smaller group, or a single thing, leaving the larger group. This makes it possible for the child to see both the subtrahend and the remainder, as well as to visualize the action.

(4) Following the presentation of each new fact through large action pictures and an oral story, small pictures of the things in the action pictures are provided. The child "takes away" the number indicated by crossing them out. In this way he finds the number left.

(5) In the next step, a single action picture is provided to illustrate another oral number story that uses the subtraction fact. This picture shows the small group in the act of separating from the larger group, but it does not show the entire larger group—the minuend—together. The sentences which the child reads help him state the subtraction fact. Then he writes the fact in vertical form by tracing dotted models of the numbers that make up the fact.

(6) The facts are used in oral number stories with pictures to illustrate them. The child finds and writes the answers. The children are not asked to read number stories at this grade level.

(7) The facts are used in examples in which the numbers are identified by words. In this situation the child will see examples, such as the one given here. He will think, "If I take 2 cars from 5 cars, how many will be left?" He will write the 3 in the answer.

$$\begin{array}{r} 5 \text{ cars} \\ \underline{2 \text{ cars}} \\ \_\_ \text{ cars} \end{array}$$

As was the case in addition, the child will not be given wholly abstract examples. Examples with abstract numbers will be introduced in Grade Two. The minus sign will not be introduced until then either.

Seeing a Group and the Subgroups

Groups of objects and semiconcrete (pictured) groups have been used to develop the concepts of *more, as many as,* and *larger* and *smaller groups.* These terms of comparison are essential to an understanding of both addition and subtraction.

Groups have also been studied as a part of the program of learning about numbers and as a readiness step for learning the addition facts. Before actual experiences with subtraction are given, the children will be given another opportunity to examine the groups upon which the facts are based. At this time the whole group will be seen first, and the emphasis will then be upon seeing the subgroups within the larger group. This experience makes a definite contribution to the understanding of subtraction because it focuses attention upon the whole group first —the minuend—before the separation of the group into smaller groups is observed.

Learning a Vocabulary for Arithmetic

For the most part, the reading vocabulary which was developed in the preceding section of the pupil's book will be used again in this section. Several words which are necessary to the development of the subtraction process will be introduced. Eleven new words occur in this section. Among them are six color names which are probably known by the children. As has been the case all through the book, the words are introduced very gradually with no more than three new words on a page. There are only 50 different words in the entire book.

Learning More about Numbers and Money

The treatment of the number system will be extended to include numbers to 150. The one-dollar bill will be introduced and its value shown. The relationship of the dollar to pennies, dimes, quarters, and half dollars will be shown also.

The eighth through the eleventh in the series of "Making Sure" tests will be provided, and terms of comparison and position, the fraction *one-half,* and telling time to the hour will be maintained.

LEARNING WHAT SUBTRACTION MEANS

Preparatory Activities

Experiences with a group of 4 and the subgroups 2 and 2 are provided on page 109. Then the first subtraction fact, 2 from 4 is 2, is introduced.

Studying a group of four. The teacher may arrange a group of 4 chairs around a table, with 2 chairs on one side and 2 on the other. Then she may ask these questions:

How many chairs are there at the table? How many are on the left side? How many are on the right side?

Have the children draw 4 trees on their papers. Let them put apples on 2 trees. Ask how many trees have no apples.

Using dramatization. This story may be dramatized by the children:

Four boys were playing marbles. Two of the boys went home. How many were playing marbles then?

As the story is dramatized, the children will see the group of 4. Then they will see the subtraction take place as 2 boys leave the group. They will see the remainder also.

The subtraction fact may be emphasized by having the 4 boys stand before the group again, and letting 2 of them walk away as the teacher says, "2 boys from 4 boys is 2 boys."

Explain to the children that when we take a small group or one thing from a larger group and find how many are left, we subtract. We call this subtraction.

Using concrete objects. The children may illustrate the subtraction fact with their counting objects, following these directions:

Place 4 counters on your desk. Take 2 of them away. How many are left when you take 2 counters from 4 counters?

Using Page 109

Have the children study the picture at the top of the page. Then have them read the questions and write the answers.

Call attention to the frogs on the log. Explain to the children that the pictures tell this number story, and that they are to think of the answer to the question:

Four frogs were on a log in the sun. Two of the frogs jumped into the water. How many frogs were left on the log?

Have the children read the direction, "Take 2 from 4," cross out 2 frogs (by tracing the dotted lines), and write the number that tells how many frogs are left.

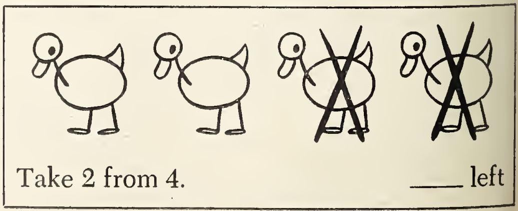
Tell the children that the next picture tells this number story. They must think how many kittens were asleep before some woke up, but the picture shows the rest of the story.

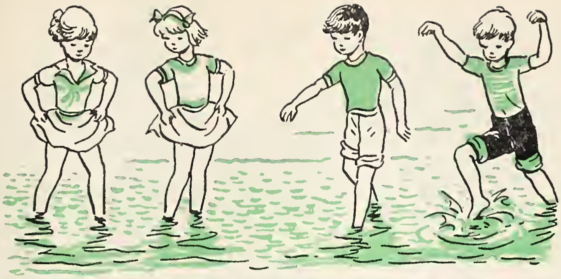
One day 4 kittens were asleep in a basket. Two kittens woke up and went away. How many kittens were asleep in the basket then?

Help the children remember that there were 4 kittens and that 2 went away. Then have them read the two sentences and follow the directions. Explain that, in this case, "Take 2 from 4" means to *think* how many are left when we take 2 from 4. Have the children trace the numbers in the example, subtract, and write the answer. Have them read the subtraction fact in this way: "2 kittens from 4 kittens is 2 kittens."

Follow-up Activities

Additional learning helps. If any of the children had difficulty, they may be given stories to dramatize. Then they may build the fact with counters. It may be a good plan to have these children make an illustrated fact card for the new fact, as shown in the next column.

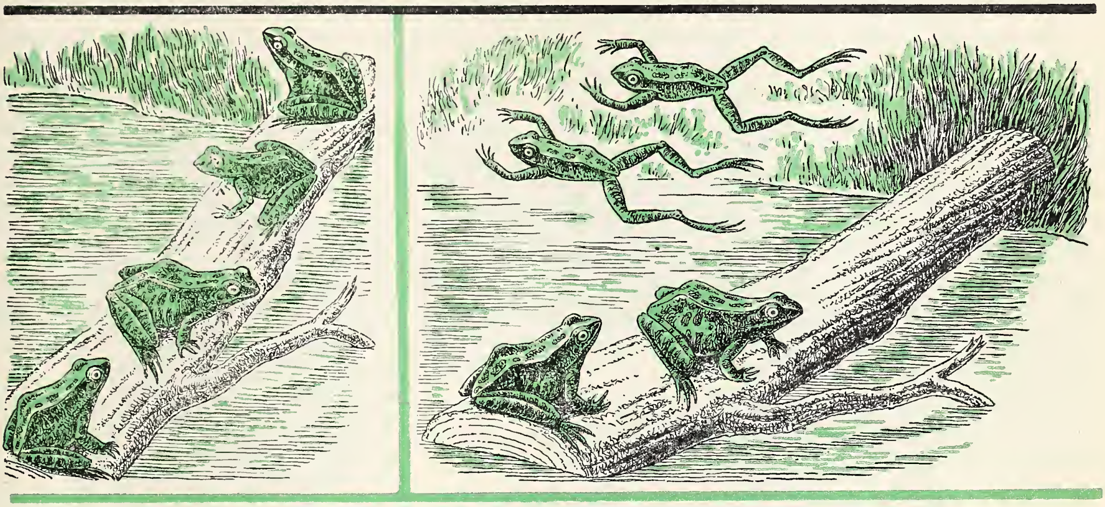


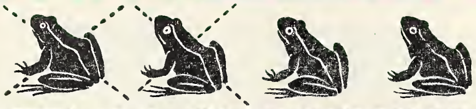


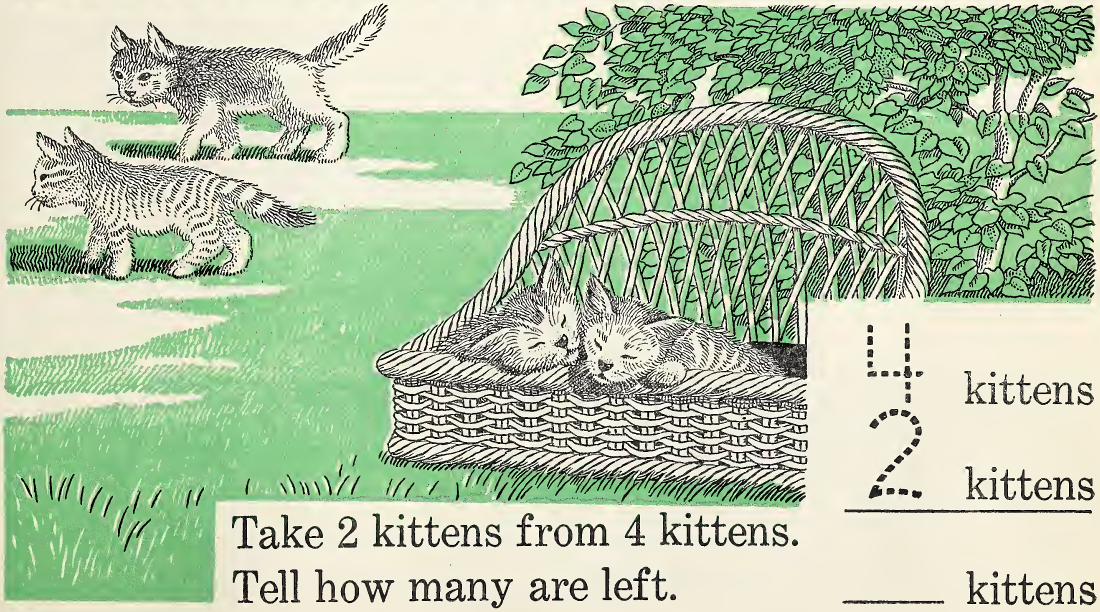
How many children? ____

How many are boys? ____

How many are girls? ____



Take 2 from 4.  ____ left



4 kittens

2 kittens

____ kittens

Take 2 kittens from 4 kittens.
Tell how many are left.

LEARNING ANOTHER SUBTRACTION FACT

Preparatory Activities

The subtraction fact, 1 from 2 is 1, is introduced on page 110. Experiences with a group of 2 are provided before the children work with the subtraction fact. The exercises include an illustrated number story which uses the new fact.

Studying a group of two. The teacher may place 2 books of different sizes on the table. Then she may ask:

How many books are on the table? How many are large? How many are small?

Using dramatization. If toy airplanes are available, they may be used for the dramatization of the following story. If not, pencils or erasers may be used.

Ted had 2 airplanes. He gave 1 of them to Bob. How many airplanes did Ted have then?

Illustrate the fact by placing 2 airplanes on the table and taking 1 away as the fact is stated: "1 airplane from 2 airplanes is 1 airplane."

It will be noticed that the questions in number stories using subtraction are frequently stated in the same way they were in addition—for example, "How many airplanes did Ted have then?" This is done to prevent the children from watching for the question "How many are left?" as a cue to subtract. An effort is made to have them focus attention upon the whole situation—not just upon the question. It is important also that the children become familiar with a variety of question forms.

Using concrete objects. The children may use their counting objects to build the new fact as the teacher gives these directions:

Place 2 counters on the desk. Take 1 counter away. How many are left when we take 1 counter from 2 counters?

Using Page 110

You may wish to introduce the words *brown* and *black*. Then have the children read the three questions about the bears and write the answers.

Tell the children that the pictures of the beavers tell this number story and that they must think of the answer:

Two beavers were building a dam. One of them swam away. How many beavers were building the dam then?

Have the children read the sentence below the pictures, cross out one beaver (by tracing the dotted lines), and write the number that tells how many beavers are left.

Tell this number story. Have the children think how many ponies there were before any were taken away, look at the picture, and answer the question.

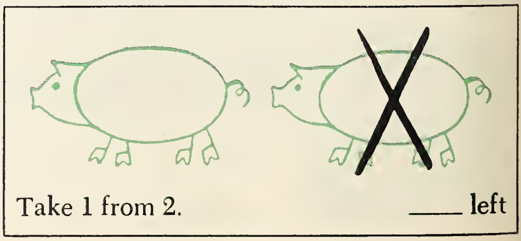
Two ponies were playing in the pasture. Alan took 1 of the ponies away. Then how many ponies were in the pasture?

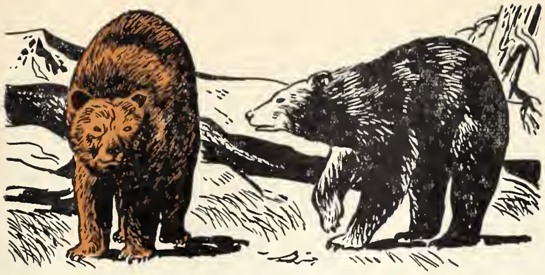
Remind the children that "Take 1 pony from 2 ponies" means to *think* how many ponies are left when we take 1 pony from 2 ponies. Then have the children trace the numbers in the example, subtract, and write the answer. They may read the fact, "1 pony from 2 ponies is 1 pony."

Follow-up Activities

Additional learning helps. If any children need more help with the new fact, they may dramatize the stories in their books, build the fact with their counting objects, and make illustrated cards for the fact as shown in the next column.

Enrichment activities. The faster learners may also make illustrated cards.

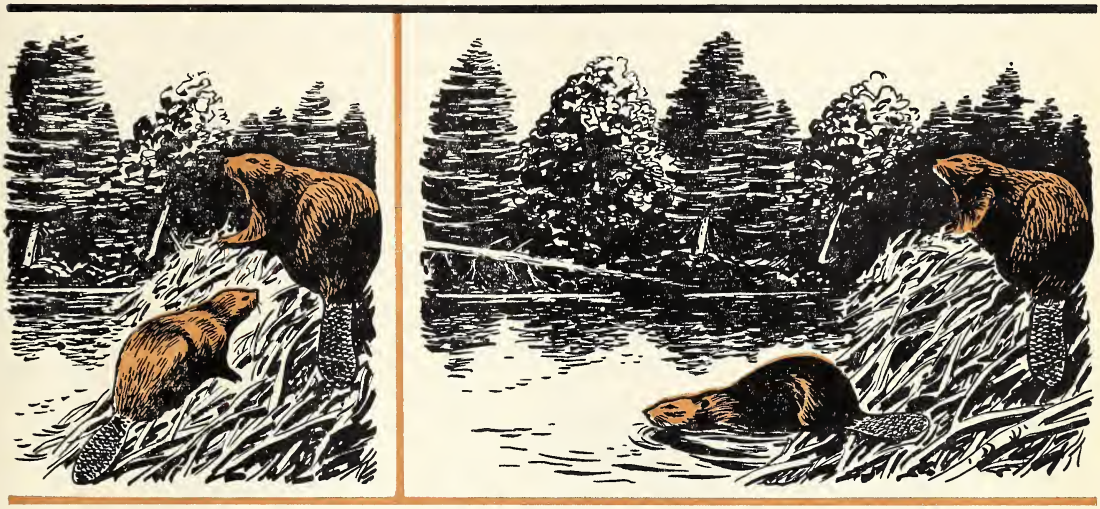


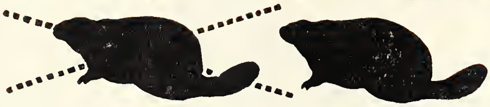


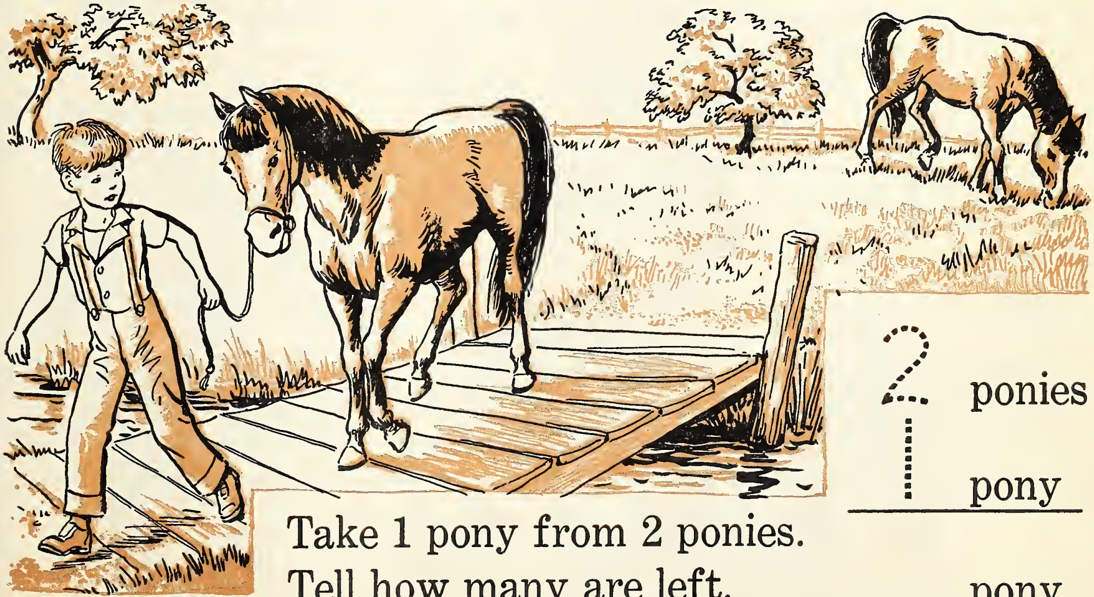
How many in all? ____

How many are brown? ____

How many are black? ____



Take 1 from 2.  ____ left



2 ponies

1 pony

____ pony

Take 1 pony from 2 ponies.
Tell how many are left.

LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

Two subtraction facts, 2 from 3 is 1, and 1 from 3 is 2, are introduced on page 111 of the pupil's book. Experiences with groups of three are provided also.

Studying groups of three. Before the children have the exercise in their books, they should work with groups in realistic arrangements and with concrete objects. Arrange in the front of the room a group of children with 2 boys and 1 girl in the group, and another group with 2 girls and 1 boy. Ask these questions in this sequence about each of the groups:

How many children are there? How many boys are there? How many girls are there?

Have the children draw 3 birds. Have them put nests under 2 birds. Have them tell how many birds there are, how many are on nests, and how many are not on nests.

Then have them draw 3 boats and put sails on 1 boat. Ask how many boats there are, how many have sails, and how many have not.

Using dramatization. These stories may be dramatized. After each dramatization, let the children repeat the action while you state the fact.

One day 3 girls were watching television. Two of the girls had to go home. How many girls were watching television then? How many are left when we take 2 girls from 3 girls?

Three boys were playing policeman. One boy had to go home for dinner. Then how many boys were playing? How many are left when we take 1 boy from 3 boys?

Using concrete objects. The children may build the facts with their counting objects while the teacher gives these directions:

Put 3 counters on the desk. Take 2 counters away. How many are left when you take 2 counters from 3 counters?

Put 3 more counters on the desk. Take 1 counter away. How many are left when you take 1 counter from 3 counters?

Using Page 111

You may wish to introduce the new word *green* before the children use their books. Then have the children study the first two pictures and read and answer the questions.

Tell the children that the two pictures of turtles tell this number story, and they must think of the answer for the question:

One day 3 turtles were sunning themselves on the bank of a pond. Two of the turtles went into the water. How many turtles were still sitting in the sun?

Have them take 2 from 3 by crossing out turtles. Then they may write the number that tells how many are left.

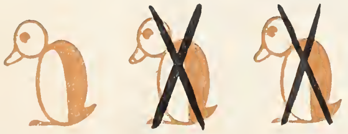
Then tell this story while the children study the next two pictures:

One day 3 squirrels were sitting in a tree eating nuts. One squirrel went down the tree to get some more nuts. Then how many squirrels were in the tree?

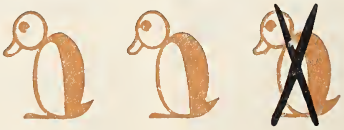
Have them complete the exercise by crossing out pictures and writing the answer.

Follow-up Activities

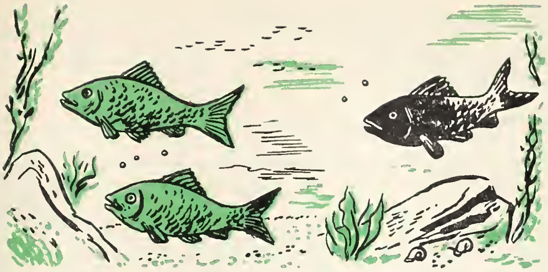
Additional learning helps. The slower learners may repeat the steps suggested as preparatory activities. They may make cards for the facts as shown below.



Take 2 from 3. ____ left



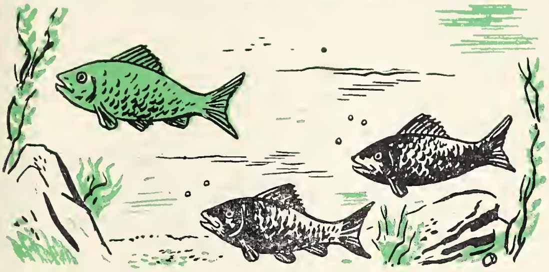
Take 1 from 3. ____ left



How many in all? ____

How many are green? ____

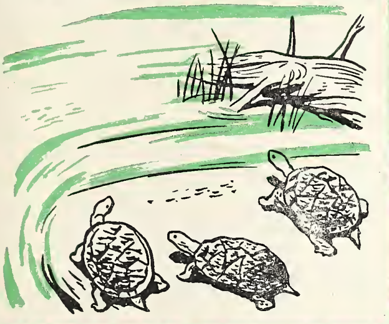
How many are black? ____

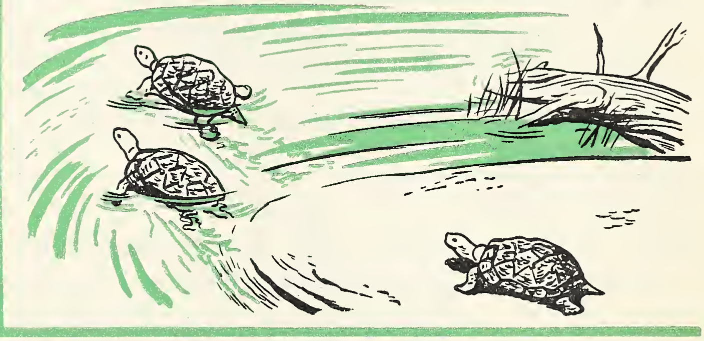


How many in all? ____

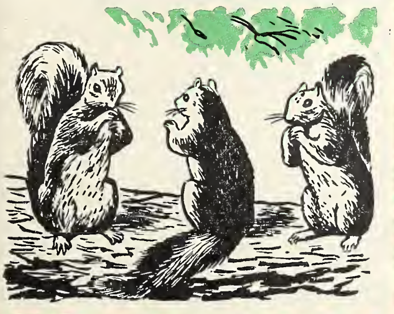
How many are green? ____

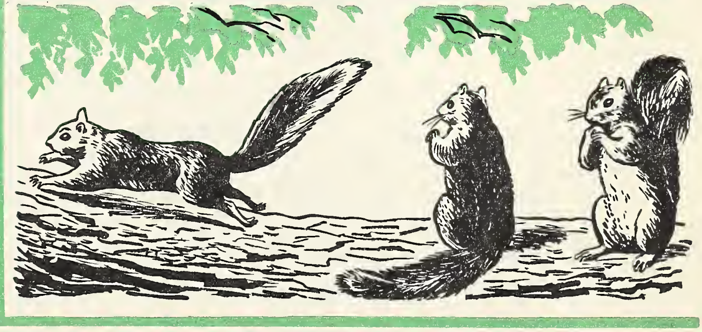
How many are black? ____





Take 2 from 3. ____ left





Take 1 from 3. ____ left

USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The two new subtraction facts are used in illustrated oral number stories on page 112 of the pupil's book. The children will write the facts in vertical form. Then the four facts that have been introduced thus far will be used in practice examples.

Using dramatization. In the illustrated number stories, when only one picture is used, it shows the action of separating taking place. Thus the children see the subgroup that is leaving, and the subgroup that remains, but the larger group made up of these subgroups must be visualized as it was before the act of separation. Readiness for doing this has been provided. Now the children may dramatize stories and think of the total group in the story (the minuend), without actually seeing the whole group together. This story may be told:

Three boys were playing Indian. Two of the boys went to see a show. How many boys were playing Indian then?

Begin the dramatization with 1 boy playing Indian and 2 walking away. Then ask:

How many boys were playing Indian? How many boys went away? How many were playing then?

Tell this story and dramatize it in the way suggested above:

Three girls were playing school. One girl went to hear a radio program. How many girls were playing school then?

In the dramatization, show the 2 girls playing school and 1 walking away. Then help the children recall the first sentence in the story, "Three girls were playing school," and answer the question.

It may be helpful to have the children look back at the pages in the book that have similar illustrations (pages 109, 110). They may try to recall the first sentence of the oral story told for each picture:

Four kittens were asleep in a basket.
Two ponies were in the pasture.

Using Page 112

Tell the children these stories and have them study the pictures, read the directions, trace the examples, and subtract:

One day 3 cows were lying under a tree in the pasture. Two of the cows went away. How many cows were under the tree then?

Sally saw 3 pigs in the field. She drove 1 pig into the pigpen. Then how many pigs were in the field?

Introduce the word *away* and help the children read the direction above the row of examples. Explain that they are to think how many are left when we take 1 duck from 3 ducks, 1 cow from 2 cows, 2 pigs from 4 pigs, and 2 kittens from 3 kittens. They "Tell how many are left" by writing the number.

Have the children finish the exercise. Give individual help if needed.

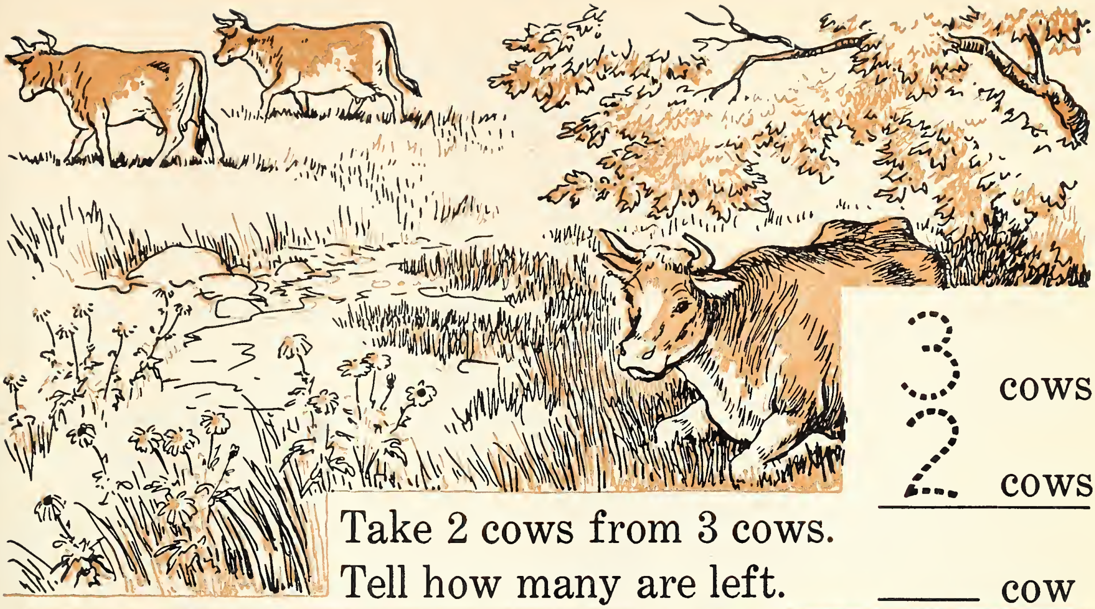
Follow-up Activities

Additional learning helps. Any children who had difficulty may dramatize the stories in their books. Then they may be given other stories that use the facts. These may be dramatized only partially, without showing the whole group together. Guiding questions may be asked:

How many were there in all? What happened to some of them? How many were left?

If the subtraction facts caused difficulty, the children may build them with their counting objects. Then they may study the illustrated cards that show the facts.

Enrichment activities. The children who did not have difficulty with page 112 may work with the materials on the arithmetic table, or use counting sticks in bundles of ten and single sticks to show what two-place numbers mean.



3 cows
2 cows
_____ cow

Take 2 cows from 3 cows.
Tell how many are left.

3 pigs
1 pig
_____ pigs

Take 1 pig from 3 pigs.
Tell how many are left.

Take away, and tell how many are left.

3 ducks	2 cows	4 pigs	3 kittens
1 duck	1 cow	2 pigs	2 kittens
____ducks	____cow	____pigs	____kitten

USING TERMS OF POSITION AND COMPARISON

Preparatory Activities

Page 113 of the pupil's book provides exercises for maintenance of skill in using the following positional terms: *left* and *right; top* and *bottom; first, next,* and *last.* The terms of comparison, *more* and *as many as,* are maintained also.

Using realistic situations. Since these are terms which the children use in connection with other school activities besides arithmetic, it is a good idea to review them in realistic situations. For example, the children may refer to the picture at the right and the one at the left on the bulletin board. They read from left to right. Most children write with their right hands.

The terms *top* and *bottom,* and *first, next,* and *last,* may be associated again with the ways in which they are used. For example, the milk bottles may be on the top shelf of the arithmetic cupboard, and the counting sticks may be on the bottom shelf. John's desk may be first, Mary's next, and Tom's last in the row.

The terms *more* and *as many as* may be reviewed in the same way. For example, there may be more children than books when the reading class assembles. Someone will need to get more books so that there are as many as there are children. There may be more seats than children in the classroom, etc.

Using Page 113

After the terms have been reviewed in realistic situations, the exercises in the pupil's book may be used. Call attention to the flagpole in the first picture. Have the children draw a boy at the right of the flagpole and a girl at the left of it.

In the next picture, have the children put a ring around the plate that has more cookies on it. Then have them draw more cookies on the other plate so that it has as many cookies on it as the one they have just drawn the ring around.

Have the children draw a red ring around the boy at the top of the slide and a yellow ring around the boy at the bottom of the slide.

Then have them draw a red ring around the first child in the parade, a blue ring around the next child, and a yellow ring around the last child in the parade.

Follow-up Activities

Additional learning helps. If there are any children who are uncertain about the terms, they should be given another chance to learn them, and to understand their meaning and the ways we use them. Experiences such as those suggested for preparatory activities may be provided. Then the children may be given an exercise similar to that in their books. They may work it out concretely at their desks, using small objects, if the teacher wishes. Such directions as the following may be given:

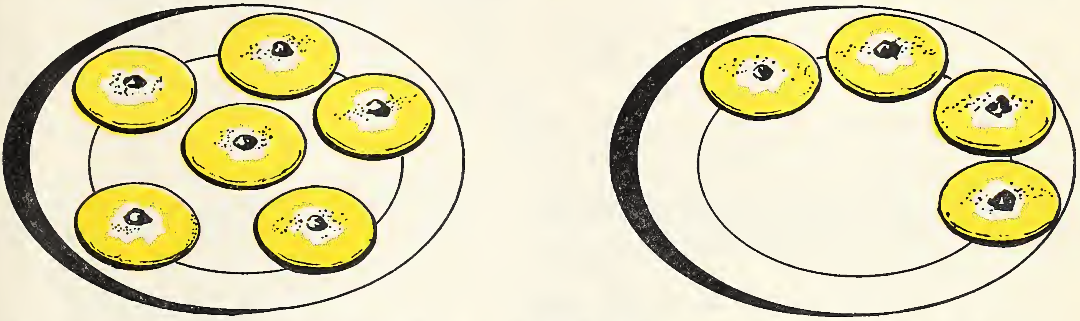
Put a box of crayons on the right side of the desk and a book on the left. Put a handful of counters on the desk. Put another handful near them. Which group has more in it? Put more counters with the smaller group so that each group has as many as the other. Put 4 books in a stack on the desk. Put a reader at the top and a music book at the bottom. Name the first, next, and last children in your row.

Enrichment activities. The faster learners may apply the terms to arithmetic. The teacher may ask such questions as:

In the number 87, which figure is at the left? Which is at the right? In this example, which number is at the top? Which is at the bottom?

```
  4 cows
  2 cows
 -------
 ___ cows
```

The children may find in magazines pictures which illustrate the terms. These may be posted on the bulletin board. The terms may be printed on cards below the pictures.



LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

Page 114 of the pupil's book provides an exercise with groups of four. Then the two subtraction facts, 3 from 4 is 1, and 1 from 4 is 3, are introduced through pictures which illustrate oral number stories.

Using realistic arrangements. The teacher may arrange 4 girls in an informal group. One of the girls may wear a hair ribbon. One of the other girls may carry a book. Then ask these questions:

How many girls are there in the group? How many girls are not wearing ribbons? How many girls are wearing ribbons?

How many girls are there in the group? How many girls have books? How many have no books?

Have the children draw 4 balloons on their papers. Have them make faces on 3 of the balloons. Then ask:

How many balloons did you draw? How many balloons have faces? How many have no faces?

Then give these directions:

Draw 4 snowmen. Put a hat on 1 snowman. How many snowmen did you draw? How many of them have hats? How many have no hats?

Using dramatization. The teacher may tell these stories for the children to dramatize:

Tom had 4 airplanes in his hangar. He took 3 of them out. How many airplanes were in the hangar then? 3 airplanes from 4 airplanes is how many airplanes?

There were 4 dolls asleep in the doll bed. The puppy took 1 of them away How many dolls were left in the bed then? 1 doll from 4 dolls is how many dolls?

Using concrete objects. The children may build the new facts with counting objects, following these directions:

Place 4 counters on the desk. Take 3 of them away. How many are left when you take 3 counters from 4 counters?

Place 4 more counters on the desk. Take 1 of them away. How many are left when you take 1 counter from 4 counters?

Using Page 114

Introduce the word *blue*, and have the children study the pictures of birds. They may read and answer the questions in order.

Tell this story while the children study the pictures of the puppies:

Four puppies were playing with a ball. Three of the puppies went away. Then how many puppies were playing with the ball?

After the children cross out 3 of the puppies and write the answer, they may read the fact, "3 puppies from 4 puppies is 1 puppy."

Tell this story:

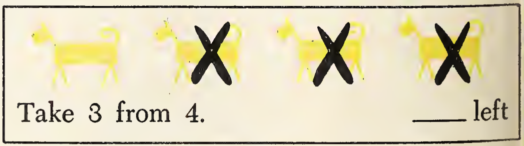
Four calves were resting. One calf got up and went away. How many calves were resting then?

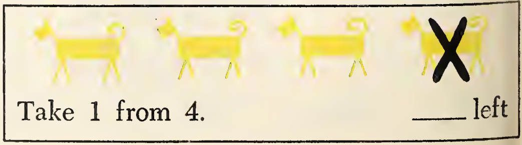
Have the children cross out 1 calf and write the answer. They may read the fact, "1 calf from 4 calves is 3 calves."

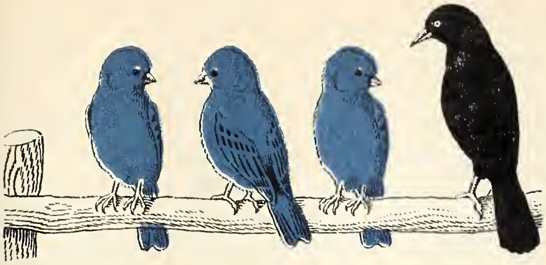
Follow-up Activities

Additional learning helps. Children who need more help should build the new facts again with their counting objects. Then they may make illustrated fact cards such as those shown in the next column.

Enrichment activities. The children who do not need help may find pictures in magazines to illustrate number stories that use the new facts, or play stories with their paper puppets that use these facts.



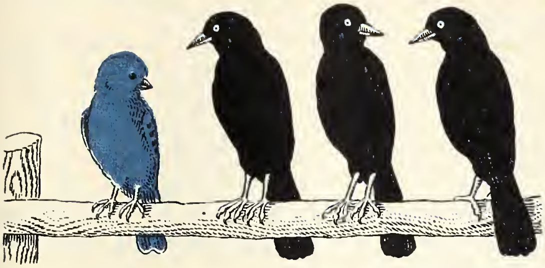




How many in all? ____

How many are blue? ____

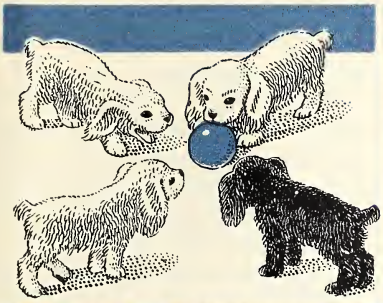
How many are black? ____

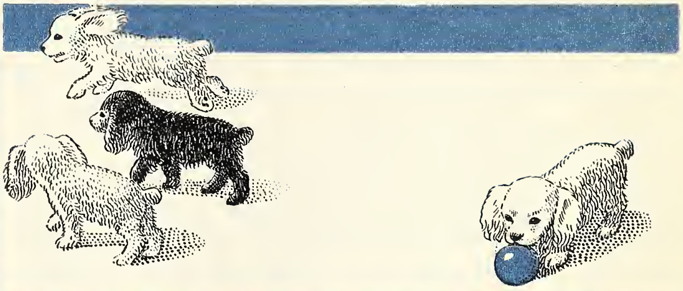


How many in all? ____

How many are blue? ____

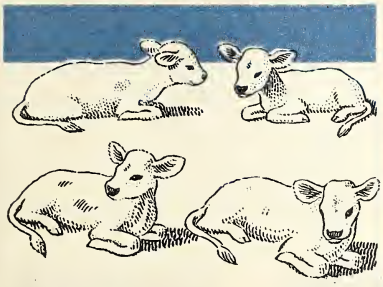
How many are black? ____

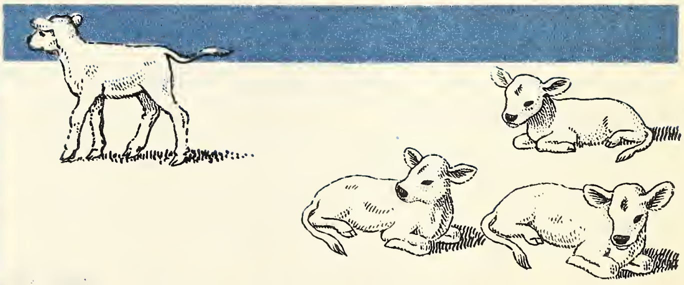




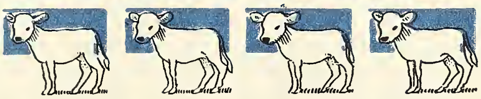
Take 3 from 4.

____ left





Take 1 from 4.



____ left

USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The subtraction facts that were just learned may be used in number stories to be told by the teacher at this time. The children will be given an opportunity on page 115 to write the new facts in vertical form, and to use them in examples, together with facts learned previously.

Using dramatization. Number stories that use the new subtraction facts may be given the children to dramatize. These number stories, or others planned by the teacher, may be told:

There were 4 apples on a plate in the kitchen. The girls took 3 of them. How many apples were left on the plate?

There were 4 birds in a cage in the pet shop. A man took 1 of the birds. Then how many birds were in the cage?

Using Page 115

Point out that the picture at the top of the page tells a number story. The children must think how many cows were in the pasture at first, see how many were driven away, and find the answer to the question.

Four cows were in the pasture. The farmer drove 3 of the cows to the barn. How many cows were left in the pasture?

Have the children answer the question orally. Then they may read the two sentences. They may trace the numbers in the example, subtract, and write the answer. Have the children read the subtraction fact, "3 cows from 4 cows is 1 cow."

Tell the following number story while the children study the picture of the ponies in the pasture:

There were 4 ponies in the pasture. The farmer took 1 of the ponies away. Then how many ponies were in the pasture?

After the children answer the question, they may read the sentences, trace the numbers in the example, subtract, and write the answer. Then they may read the subtraction fact, "1 pony from 4 ponies is 3 ponies."

Have the children read the direction above the examples. Then they may find, and write, the answers for the examples.

Follow-up Activities

Additional learning helps. Any children who need more opportunities to learn may be helped to make up number stories that use the facts. They may dramatize the stories, and build the facts again with counting objects. Then they may use the cards they have made to study the facts.

Enrichment activities. The children who do not need help with the facts may make study and practice cards, as illustrated below, for use at the arithmetic table. Some of the children may be interested in using the number charts and the counting sticks to learn more about the numbers to 100.

Front

3 from 4

4 cows
3 cows
___ cow

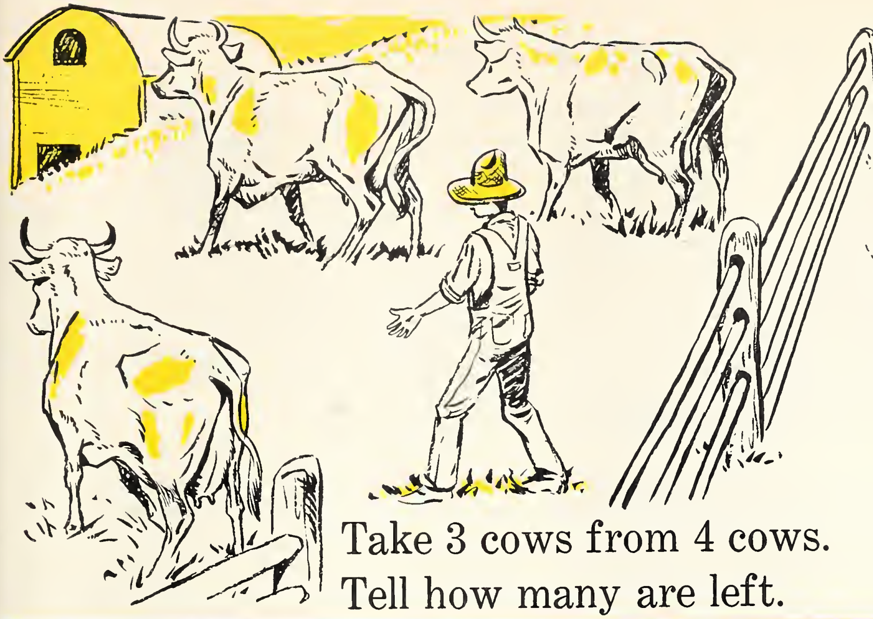
1 from 4

4 cows
1 cow
___ cows

Back

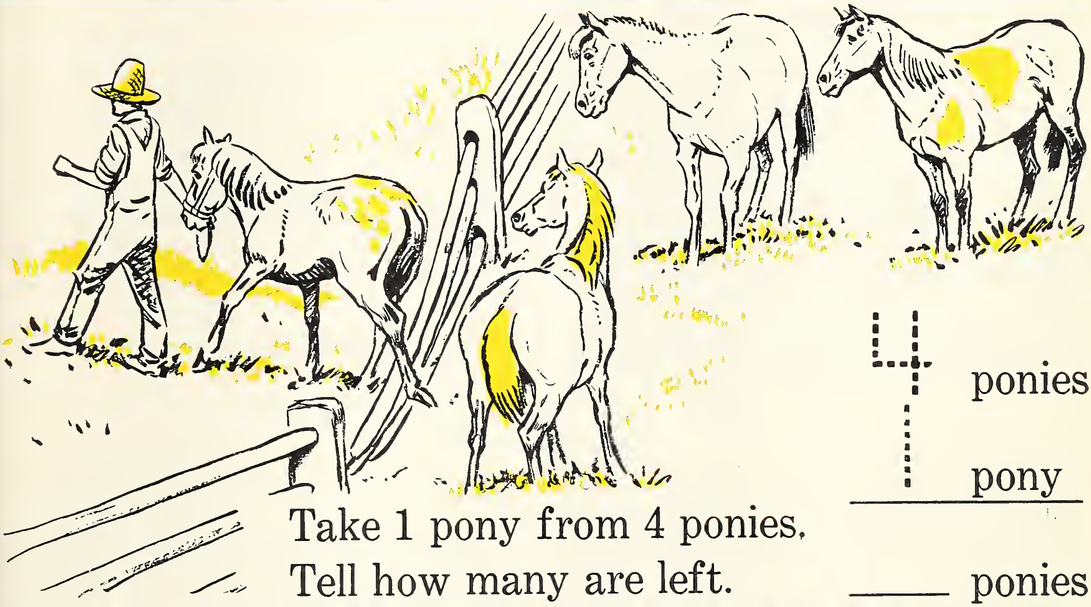
4 cows
3 cows
1 cow

4 cows
1 cow
3 cows



Take 3 cows from 4 cows.
Tell how many are left.

4 cows
3 cows
_____ cow



Take 1 pony from 4 ponies.
Tell how many are left.

4 ponies
1 pony
_____ ponies

Take away, and tell how many are left.

2 ducks	4 airplanes	3 boats	4 hens
1 duck	3 airplanes	1 boat	1 hen
____duck	____airplane	____boats	____hens

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Up to this time, the number stories have been part of the plan for learning the subtraction facts and for practising them. The children may now have their first exercise with subtraction number stories in which they write only the answer. The stories will be told to the children as they study pictures which illustrate them. Material for this learning step is provided on page 116 of the pupil's book. Examples using known facts are also provided.

Using dramatization. The teacher may tell a few number stories for the children to dramatize. The children should observe to see how many there were at first, how many went away, and how many were left, and say the answers. These stories may be used, unless the teacher, or the children, have others to suggest:

One day 4 ponies were pulling a wagon in a circus parade. The harness broke and 2 of the ponies ran away. How many ponies were pulling the wagon then?

There were 4 elephants in the parade. Three of the elephants left the parade and went into the tent. How many elephants were in the parade then?

Two clowns were riding a pony in the parade. One of the clowns fell off. How many clowns were left on the pony?

There were 4 clowns walking on stilts in the parade. One of the clowns jumped on a camel and rode away. Then how many clowns were walking on stilts?

Using Page 116

The children may look at each picture and listen while the teacher tells the story which the picture illustrates. Then they may write the answer for the question in the story.

Four kittens were playing with a shoe. But Mary pulled a string along the floor and 3 of the kittens chased it. Then how many kittens were playing with the shoe?

Four boys were making a house for their pet rabbit. One of the boys went home for lunch. How many boys were working on the house then?

Three ducks went for a swim one day. Two of the ducks came out of the water. How many ducks were left in the water?

Four rabbits were in a garden. Two of the rabbits ran away. How many rabbits were in the garden then?

Have the children read the direction above the examples and follow it.

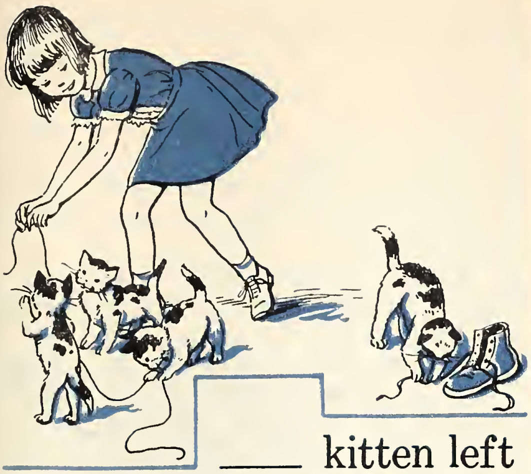
Follow-up Activities

Additional learning helps. If there are any children who had difficulty with the number stories on page 116, the teacher will wish to work with them to find whether it was inability to interpret the stories that caused the trouble or whether the children did not know the subtraction facts.

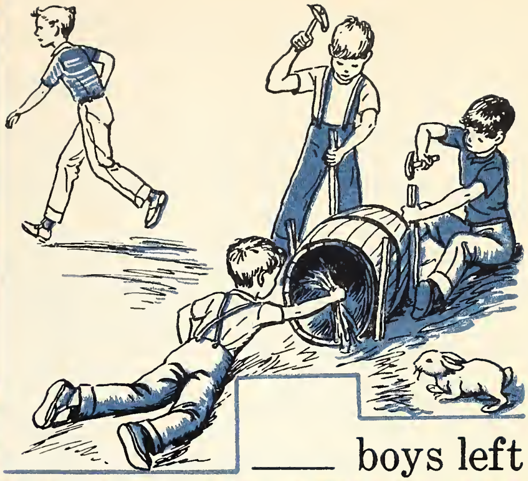
Those children, if there are any, who did not understand the stories may be helped to interpret them through the use of guiding questions. Having the children learn to retell the stories from the pictures may help also. After the children have corrected the mistakes in their books, they may be given similar number stories to work out alone by dramatizing them with small concrete objects.

Those children who need more help with subtraction facts may use the illustrated study and practice cards to study the facts they missed. Then the children may build the facts with their counters and say them three or four times.

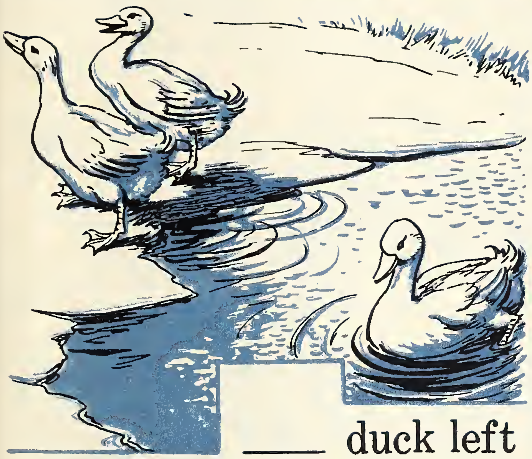
Enrichment activities. The faster learners may be interested in solving, without the aid of dramatization or illustrations, some oral problems that use the subtraction facts. The teacher may tell a few number stories for them. Then the children may make up their own stories and tell them to each other.



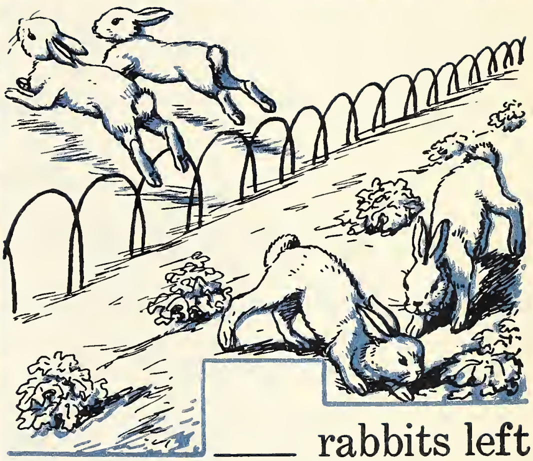
____ kitten left



____ boys left



____ duck left



____ rabbits left

Take away, and tell how many are left.

3 airplanes
2 airplanes
____airplane

2 trees
1 tree
____tree

3 trains
1 train
____trains

4 chickens
2 chickens
____chickens

4 toys
3 toys
____toy

4 rabbits
1 rabbit
____rabbits

UNDERSTANDING NUMBER SEQUENCE AND MEANINGS TO 100

Preparatory Activities

Exercises in writing numbers and in counting by tens and ones to find the number of things in the picture are provided on page 117 of the pupil's book.

Using the blackboard. The children may practise writing the numbers at the blackboard. One child may write the numbers *1* to *10* in a column, another child those from *11* to *20* in the next column, and so on.

After the numbers to 100 are written, the teacher may ask a child to put a line under the number *46*, for example. Then he may underline the number that comes just before 46 and the number that comes just after 46. Have him read these 3 numbers. Then repeat the exercise several times with different children and various numbers in different decades. Some exercises should require bridging the decades. For instance, finding the numbers that come before and after *80* would require writing numbers from two decades.

Using concrete objects. The bundles of ten and single counting sticks may be used again for experiences in counting by tens and ones to find how many there are. The teacher may place bundles of ten sticks and single sticks on the children's desks. These should be arranged to illustrate various numbers. For example, 4 bundles of ten sticks and 8 single sticks would illustrate the number *48*. Each child may count the sticks by tens and ones and write on his paper the number of sticks he has.

Using Page 117

Have the children read the number *40*. Then have them trace the 39 to show what number comes just before *40*, and the *41* to show what number comes just after *40*.

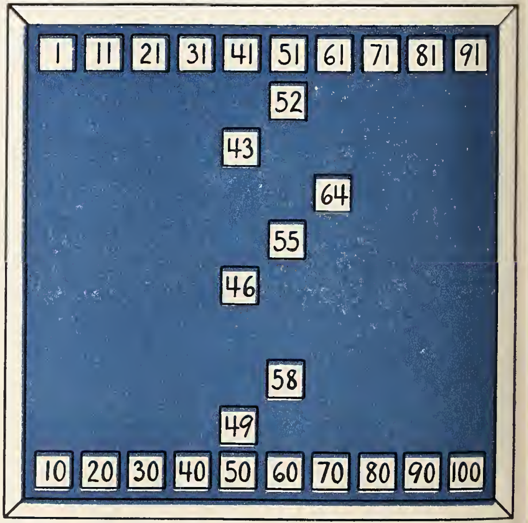
Explain that the other numbers on the page are to be handled in the same way. Then let the children do the exercise.

Tell the children that each bundle has ten sticks in it. Have them count the bundles as tens and the single sticks as ones. When they know how many sticks there are in the picture, they may write the number.

Follow-up Activities

Additional learning helps. The slower learners may work with small counting blocks or cardboard squares with the numbers written on them. Having a tray, box lid, or picture frame to work in will help. For example, they may place across the top of the tray the cards with the numbers ending in 1, and across the bottom the cards with the numbers ending in 0, as shown in the next column. Then they may find the cards having on them the numbers in the exercise at the top of page 117 and place them in the tray. Finally, they may add the cards that come before and after these cards.

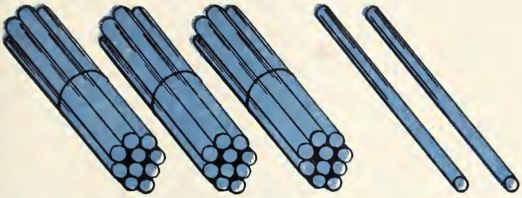
Using concrete objects for counting by tens and ones will be helpful to those children who had difficulty with that exercise. They may be given further experiences in using counting sticks.



39 40 41 ____ 43 ____ ____ 46 ____

____ 49 ____ ____ 52 ____ ____ 55 ____

____ 58 ____ ____ 61 ____ ____ 64 ____



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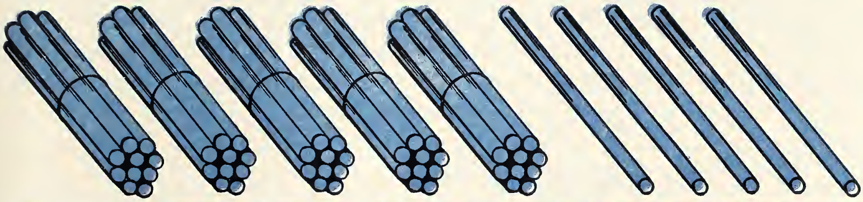

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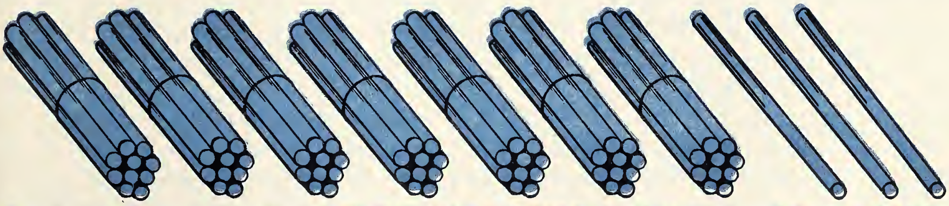

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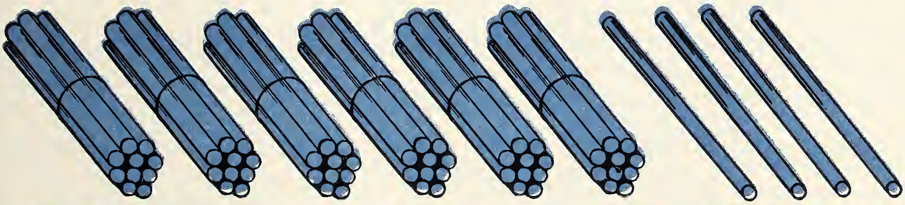

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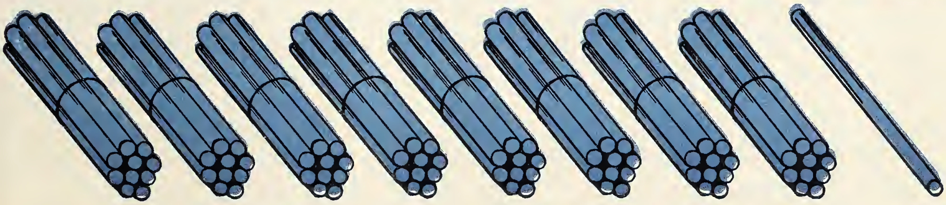

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LEARNING TO READ NUMBERS TO 150

Preparatory Activities

The children may now learn to read numbers to 150 and develop an understanding of the number sequence. Page 118 of the pupil's book provides an exercise for this purpose. A maintenance exercise for the number words *one* to *six* is provided also.

Building a number chart. The teacher will find it useful to make a large number chart with the numbers 101 to 150 on it. Since the children have very little need for writing numbers beyond 100, the teacher may write the numbers on the chart as the children say them.

This is an excellent time to work on pronunciation and enunciation, since many children in Grade One have difficulty saying such words as *hundred, ninety, eighty,* etc. Care should be taken to teach them to say "one hundred forty-six," etc., not "one hundred *and* forty-six."

Ask the children what number comes after 80. Then let them count or read the numbers from 81 to 100 on the old chart of numbers to 100. Then let someone say what number comes next after 100. Write the numbers on large chart paper in columns of ten beginning with 101. The children may say the numbers from 101 to 110 as they are written on the chart. Then ask what number comes next after 110, and write in the next column the numbers from 111 to 120. Point out that these numbers are just the same as the numbers 11 to 20 except that there is a 1 (1 hundred) at the left. Continue in this way to 150.

Have various children take turns reading the numbers by decades. Then have them find a certain number and read the numbers that come before and after it. Have them read all of the numbers that end in zero, those that end in 5, etc.

Using Page 118

Have the children discover the fact that the chart begins with the number 51 and extends to 150. Help them find 100, 101, 110, 111, 120, 121, 130, 131, 140, 141, and 150. Develop again the realization that the numbers 110 to 150 are just like those from 10 to 50 except that each of the larger numbers, such as 110, has a 1 at the left to show that it means 1 hundred ten and not ten alone.

Have the children take turns reading the chart from 51 to 60, 61 to 70, and so on.

Experiences may be provided also in reading the number that comes just before and the number that comes just after certain numbers, such as: 123, 140, 135, 109, 130, etc The children may notice that this is page 118 in their books. They may find 118 on the chart and read the numbers to 144, which is the number of the last page in their books.

Have the children read the direction in each box and do as it tells them. The toys may be simple line drawings such as those shown here. If the children prefer, they may draw balls or balloons.

Follow-up Activities

Additional learning helps. If there are any children who need help with numbers to 150, they may use the chart again. Small cards with the numbers 101 to 150 on them may be arranged in sequence.

If the number words caused trouble, the matching game (See page 232.) may be used to help them learn the words.

Enrichment activities. The faster learners may use counting sticks in bundles of 100 and of 10, and single sticks, to show what the numbers to 150 mean. Those who wish to do so may make a game by writing each of the numbers from 101 to 150 on a small block or card. These may be arranged in sequence in trays or on the desks.

51	61	71	81	91	101	111	121	131	141
52	62	72	82	92	102	112	122	132	142
53	63	73	83	93	103	113	123	133	143
54	64	74	84	94	104	114	124	134	144
55	65	75	85	95	105	115	125	135	145
56	66	76	86	96	106	116	126	136	146
57	67	77	87	97	107	117	127	137	147
58	68	78	88	98	108	118	128	138	148
59	69	79	89	99	109	119	129	139	149
60	70	80	90	100	110	120	130	140	150

Draw three toys.

Draw six toys.

Draw five toys.

Draw one toy.

Draw two toys.

Draw four toys.

LEARNING ABOUT THE ONE-DOLLAR BILL

Preparatory Activities

The exercises on page 119 of the pupil's book were planned to show that one dollar is as much money as 100 pennies, 10 dimes, 4 quarters, or 2 half dollars.

Using coins. If the classroom situation makes this feasible, the teacher will wish to use actual money for part of the exercise to enable the children to recognize the coins and the one-dollar bill. Make-believe money, made by the children or purchased for the purpose, may be used also.

Display a one-dollar bill and ask the children to identify it. Let them read the words *one dollar* if they can. Talk about the picture and the printing. Then ask who knows how much money it is. Get as much help from the children as they can give.

Then arrange on the table 10 stacks or piles of pennies with 10 in each stack. Tell the children that one dollar is as much money as the pennies. Have them count by tens to find how many pennies there are. Stress the fact that one dollar is as much money as 100 pennies, or 100 cents.

Arrange on the table 10 dimes and a one-dollar bill. Tell the children that one dollar is as much money as the dimes. Let them count the dimes to find how many there are. Emphasize the fact that one dollar is as much money as 10 dimes.

Put 4 quarters on the table by the one-dollar bill. Tell the children that one dollar is as much money as the quarters. Ask how many quarters there are. Emphasize the fact that one dollar is as much money as 4 quarters.

Put 2 half dollars on the table by the one-dollar bill. Tell the children that one dollar is as much money as the half dollars. Ask how many half dollars there are. Emphasize the fact that one dollar is as much money as 2 half dollars.

Using Page 119

This exercise will enable the children to do individually the things they just did as a group with concrete materials. Be sure each child identifies the one-dollar bill. Then tell them that one dollar is as much money as the pennies. Have them count by tens to find how many pennies there are. They may write the number. Then ask, "One dollar is as much money as how many pennies?"

Tell the children that the one-dollar bill is as much money as the dimes. Have them count the dimes and write the number they counted. Then ask, "One dollar is as much money as how many dimes?"

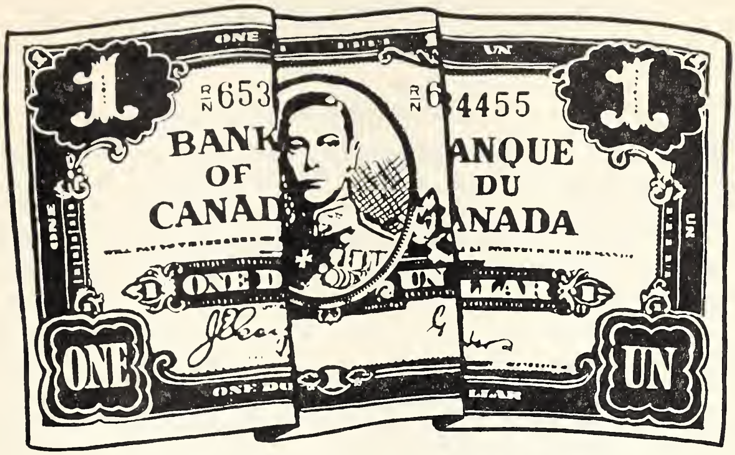
Tell the children that the one-dollar bill is as much money as the quarters. Have them write the number that tells how many quarters there are. Then ask, "One dollar is as much money as how many quarters?"

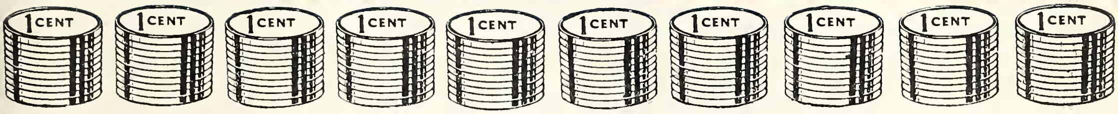
Tell the children that the one-dollar bill is as much money as the half dollars. Have them write the number of half dollars they see. Then ask, "One dollar is as much money as how many half dollars?"

Follow-up Activities

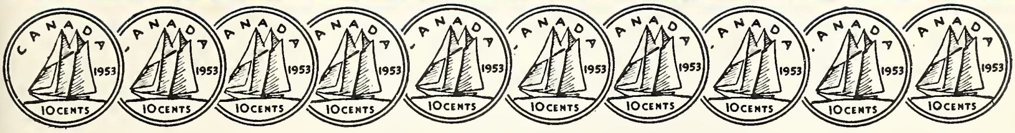
Additional learning helps. Any children who need help may be given further experiences with the toy money. If they can learn the fact that one dollar is as much as 100 pennies, or cents, the relationship to other coins can be developed with the coins and 100 pennies. The pennies can be arranged in tens and matched with dimes. Then they can be arranged in twenty-fives and matched with quarters. Next, the 100 pennies can be placed in two piles of 50 each and matched with half dollars.

Enrichment activities. The faster learners may play bank with the toy money. They may exchange one-dollar bills for pennies, dimes, quarters, and half dollars. They may be interested in finding or making pictures of things that cost one dollar.

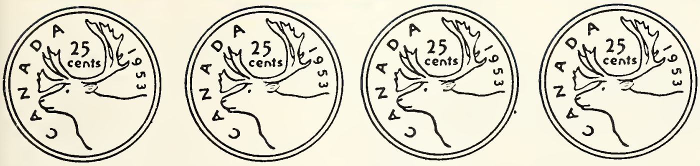




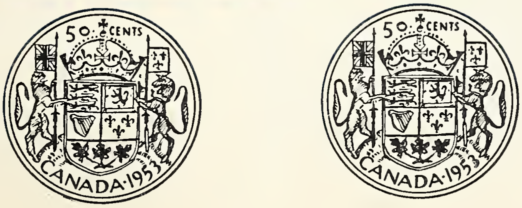
How many? ______



How many? ______



How many? ______



How many? ______

UNDERSTANDING THE RELATIVE VALUE OF UNITS OF MONEY

Preparatory Activities

The exercises on page 120 of the pupil's book are planned to extend the understanding of the relationships between one dollar and pennies, dimes, quarters, and half dollars. These relationships are developed through the use of items that cost 1 cent, 10 cents, 25 cents, and 50 cents.

Using realistic experiences. The children may name things which cost 1 cent, 10 cents, 25 cents, and 50 cents. Then they may find how many of each item can be bought for one dollar. For example, the children may name a 1-cent cooky, a 10-cent candy bar, a 25-cent car, and a 50-cent airplane.

Have the children tell how many 1-cent cookies they can buy for 1 cent, or a penny. Ask how many cookies can be bought for one dollar. If they do not know, let them turn back to page 119 and find how many pennies are as much money as one dollar. Then they may pretend that their counters are cookies and count out one "cooky" for each of 100 pennies to find the answer to the question

Have the children tell how many 10-cent candy bars they can buy for a dime. Ask them how many candy bars they can buy for one dollar. If they do not know, they may be reminded that one dollar is as much money as 10 dimes. A dollar may be exchanged for 10 dimes and they may pretend to buy candy bars to find how many they can buy for the 10 dimes, or one dollar.

Have the children tell how many 25-cent cars they can buy for a quarter. If they cannot tell how many 25-cent cars they can buy for one dollar, they may be helped to recall that one dollar is as much money as 4 quarters. If they need to do so, they may exchange a one-dollar bill for 4 quarters and pretend to buy the cars to find how many they can get for the 4 quarters, or the one-dollar bill.

Have the children tell how many 50-cent airplanes they can buy for a half dollar. Then have them tell, or let them find, how many they can buy for one dollar.

Using Page 120

Since the children have worked out a similar exercise with concrete objects and make-believe coins, they should be able to do this exercise independently. Have them identify the marble and learn that 1 cent, or 1 penny, will buy 1 marble. Ask them how many marbles one dollar will buy. Have them write the number on the line.

Help the children find that a dime will buy 1 ice cream cone. Ask them how many they can buy for one dollar. Have them write the number.

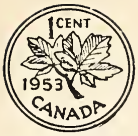
Develop the fact that 1 boat can be bought for a quarter. Ask the children how many boats they can buy for one dollar. Have them write the number.

Let the children tell that they can buy 1 doll for a half dollar. Ask how many dolls they can buy for one dollar. Have them write the number.

Follow-up Activities

Additional learning helps. If some of the children had difficulty with page 120, they may be helped to work out the page with play money and concrete objects, which they pretend are the things in the pictures. By exchanging a one-dollar bill for coins—dimes, for example—they can find how many 10-cent items can be bought for one dollar.

Enrichment activities. The faster learners may make pictures, or cut them from magazines, of things that cost 1 cent, 10 cents, 25 cents, and 50 cents. Then they may play store and pretend to buy the things with pennies, dimes, quarters, half dollars, or one-dollar bills. They may also play bank with the toy money.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CANADA

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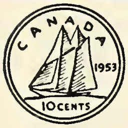
BANK OF CANAD
ANQUE DU ANADA
ONE
UN


CANADA
1953
10 CENTS

1
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ANQUE DU ANADA
ONE
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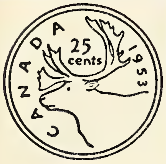
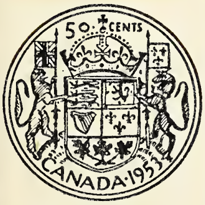

CANADA
25 cents
1953

1
BANK OF CANAD
ANQUE DU ANADA
ONE
UN


50 CENTS
CANADA·1953

1
BANK OF CANAD
ANQUE DU ANADA
ONE
UN

LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

Two new subtraction facts, 4 from 5 is 1, and 1 from 5 is 4, are introduced on page 121 through action pictures which illustrate oral number stories.

Using realistic arrangements. The teacher may arrange in a group 5 objects, such as 4 small chairs and 1 large chair. Have 1 chair at the end of a table and the 4 at one side. Then ask these questions:

How many chairs are there at the table? How many are small? How many are large?

How many chairs are there in all? How many are at the end of the table? How many are at the side of the table?

Have the children draw 5 stick men, putting hats on 4 of them. Ask:

How many men did you draw? How many have hats? How many do not have hats?

Have them draw 5 chairs for the men. One chair may have rockers. Then ask:

How many chairs did you draw? How many chairs have rockers? How many have no rockers?

Using dramatization. These stories may be told and dramatized:

One day 5 women were buying hats. Four of the women left the store. How many women were buying hats then? 4 women from 5 women is how many women?

Five men were buying gasoline at a filling station. One of the men drove away. Then how many men were buying gasoline? 1 man from 5 men is how many men?

Using concrete objects. The children may build the facts with counting objects while the teacher gives these directions:

Place 5 counters on your desk. Take 4 of the counters away. How many are left when you take 4 counters from 5 counters?

Place 5 more counters on the desk. Take 1 of the counters away. How many are left when you take 1 counter from 5 counters?

Using Page 121

You may wish to introduce the word *yellow*. Then call attention to the yellow and black butterflies. Have the children read and answer the questions in order.

Tell the children this story as they study the pictures of pelicans:

One day 5 pelicans were on the shore. Then 4 of them flew away. How many pelicans were left on the shore?

After the children answer the question, they may read the sentence below, do what it tells them, and write the number left. They should read the fact, "4 pelicans from 5 pelicans is 1 pelican."

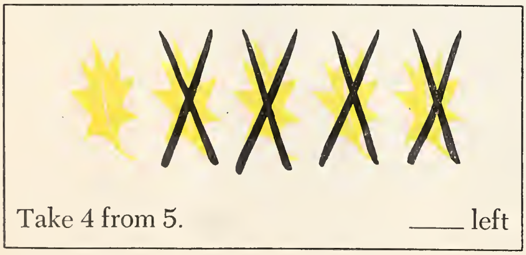
Then tell this story and follow the same procedure:

One day 5 alligators were lying on the sand. One of the alligators went into the water for a swim. How many alligators were on the sand then?

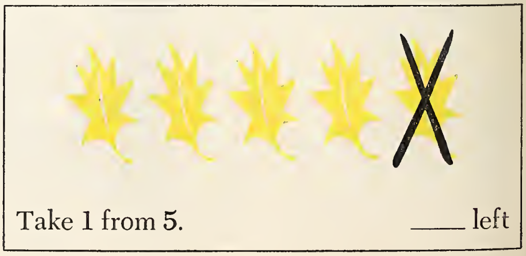
Follow-up Activities

Additional learning helps. The slower learners may make illustrated fact cards.

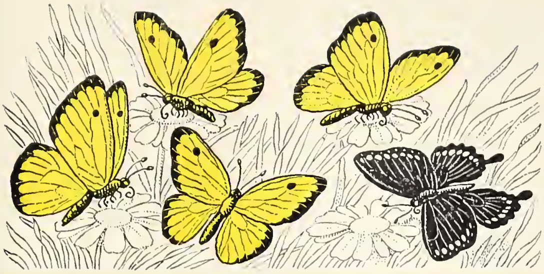
Enrichment activities. The faster learners may continue to play store with toy money.



Take 4 from 5. ____ left



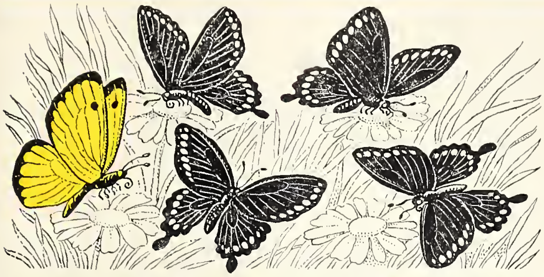
Take 1 from 5. ____ left



How many in all? ____

How many are yellow? ____

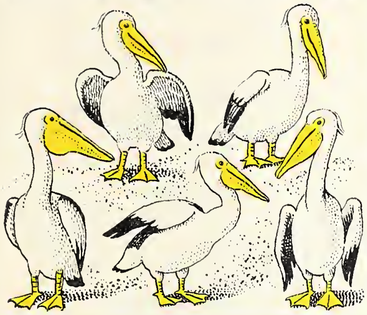
How many are black? ____

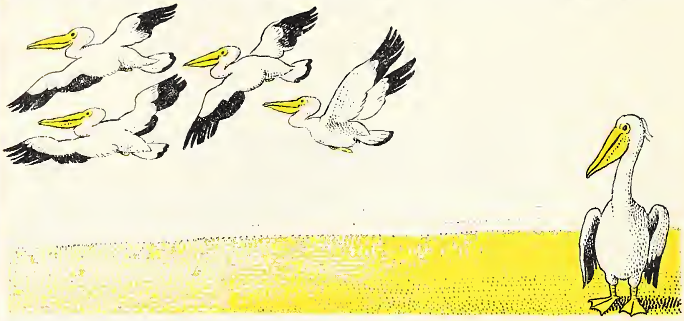


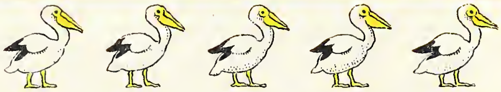
How many in all? ____

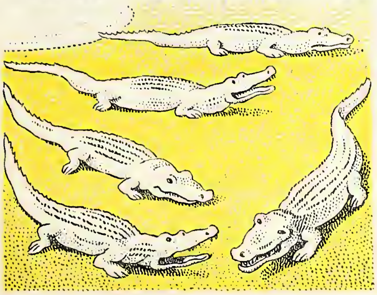
How many are yellow? ____

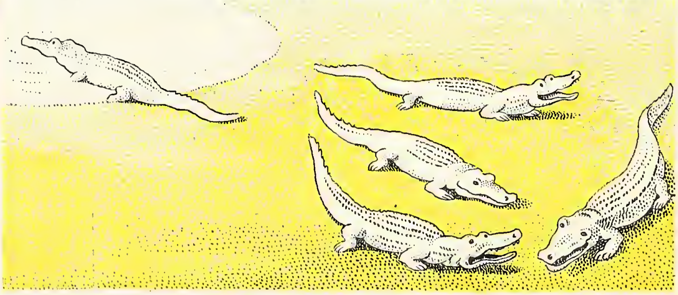
How many are black? ____

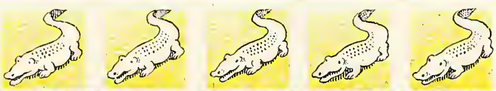




Take 4 from 5.  ____ left





Take 1 from 5.  ____ left

USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The new subtraction facts are used on page 122 of the pupil's book in oral number stories which are illustrated by action pictures. The children will write the facts in vertical form. They will use various subtraction facts in examples.

Using dramatization. The teacher may give the children another opportunity to understand the subtraction process and to use the new facts by telling these number stories, or similar stories, to be dramatized. The children should first think how many there were in all. Then they should observe the number that are taken away, and tell how many are left.

One day 5 sandwiches were on a plate on the table. John took 4 of the sandwiches to his friends. How many sandwiches were left on the plate?

Mary had 5 flowers in her garden. She took 1 of the flowers to her mother. How many flowers were in her garden then?

Using Page 122

This number story may be told from the picture at the top of the page:

A farmer had 5 baby chickens in a box. Four of the chickens climbed out of the box and went away. Then how many chickens were in the box?

After the children answer the question, they may read the two sentences, trace the numbers, and write the answer. They may read the subtraction fact, "4 chickens from 5 chickens is 1 chicken."

The teacher may tell this number story while the children study the next picture:

Five wild ducks were swimming one day. One duck flew away. How many ducks were swimming then?

After the children answer the question, they may read the sentences, complete the example, and read the subtraction fact, "1 duck from 5 ducks is 4 ducks."

Have the children read the direction above the examples and follow it.

Follow-up Activities

Additional learning helps. If any of the children had difficulty with the number stories, they may have help in making up number stories that use the new facts.

If the children understood the stories, but have not yet learned the subtraction facts, they may work them out with their counting objects. Then they may use the illustrated fact cards.

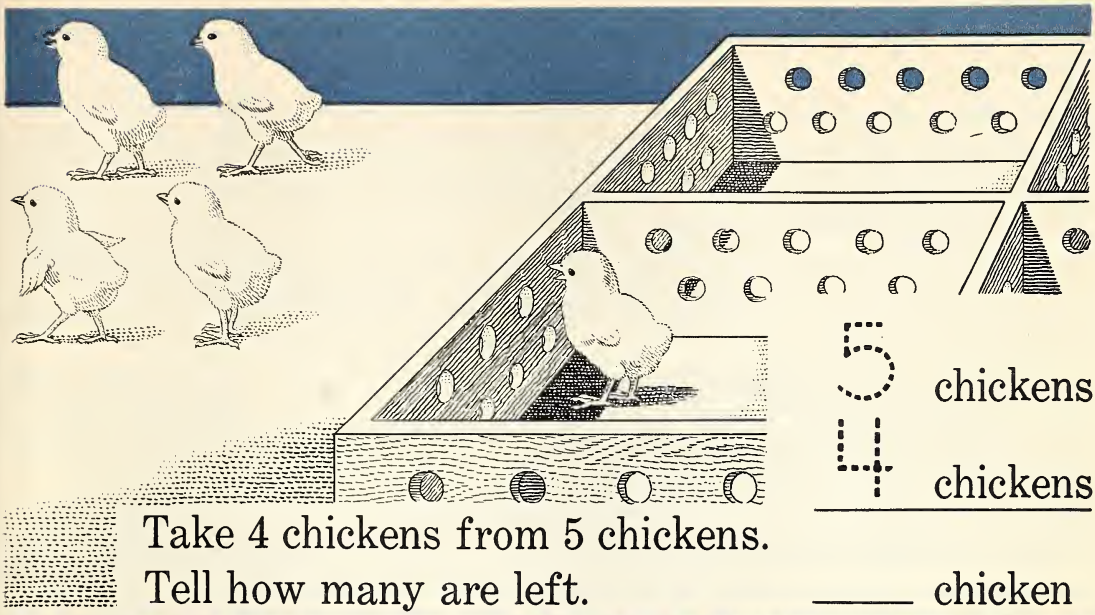
Enrichment activities. Perhaps the faster learners will be interested in making up number stories to play in their puppet theatre. They may use the cards and other materials on the arithmetic table. They may also make study and practice cards for the new facts, arranging the facts in vertical form as shown below. These illustrated cards may be put on the arithmetic table.

Front

4 from 5	1 from 5
5 hats 4 hats ___ hat	5 hats 1 hat ___ hats

Back

5 hats 4 hats 1 hat	5 hats 1 hat 4 hats



5 chickens

4 chickens

Take 4 chickens from 5 chickens.
Tell how many are left.

_____ chicken

5 ducks

1 duck

Take 1 duck from 5 ducks.
Tell how many are left.

_____ ducks

Take away, and tell how many are left.

5 wagons	4 boats	5 ponies	4 trees
1 wagon	2 boats	4 ponies	1 tree
_____wagons	_____boats	_____pony	_____trees

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Another opportunity for practice in solving problems is provided for the children on page 123 of the pupil's book. The number stories are to be told by the teacher from action pictures in the pupil's book. The children will answer the questions in the stories. Practice examples in subtraction are also provided on this page.

Using dramatization. The children may be given the opportunity to visualize the subtraction process again through dramatization before they do the exercise in their books. The following stories may be dramatized:

One day 5 children were roller skating. Four of them went to play on the swings. Then how many children were skating?

Four children were swinging in the swings in the park. One child had to go home. How many children were swinging then?

Sally was pushing 3 dolls in her doll buggy. Mary took 2 of the dolls. How many of Sally's dolls were left in the doll buggy then?

Using Page 123

The teacher may explain to the children that the pictures on this page tell the following number stories. The teacher will tell the number stories. The children will think of the answers for the questions in the stories and write the answers.

The farmers were loading 4 wagons with corn for the market. Soon 3 of the wagons were filled and were driven off. How many wagons were left?

There were 2 trains at the railroad station. One of the trains pulled out of the station and went away. How many trains were at the station then?

Five airplanes were on the ground at the airport. One of the airplanes flew away. Then how many airplanes were on the ground at the airport?

Have the children read the direction above the examples and follow it.

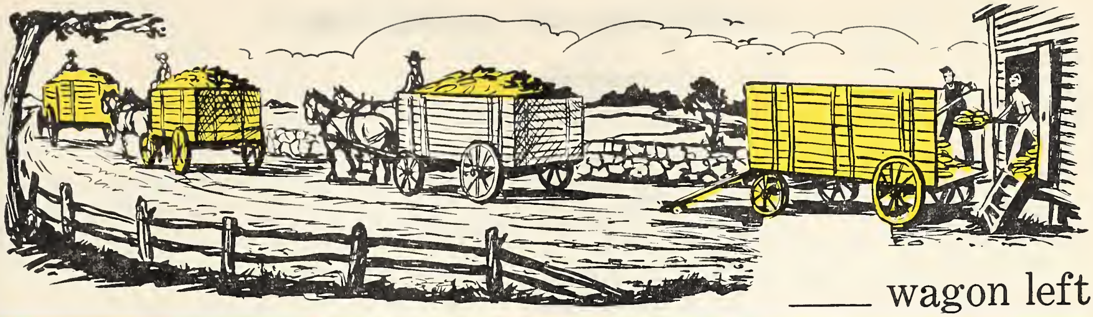
Follow-up Activities

Additional learning helps. If there are any children who had trouble with the number stories, they may be given another chance to understand them. The teacher may tell the stories again. Then the children may be asked to tell the stories in their own words as they look at the pictures. The teacher may ask questions to help them think through the stories if they still need help. For example, these questions may be asked:

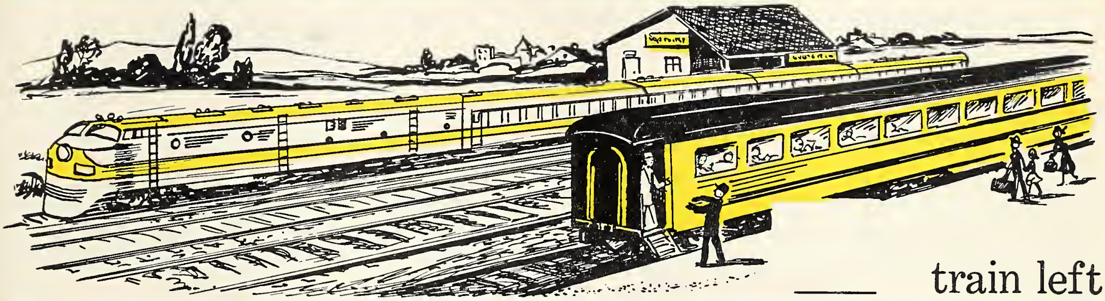
How many wagons were being filled with corn before any of them were driven away? What happened to 3 of the wagons? How many were left to be filled?

If any of the children did not know the subtraction facts that were used in the stories and the examples, they may be helped to find the study and practice cards for the facts they did not know. Each child may study the facts he missed. Then he may build the facts with his counting objects, and say them three or four times.

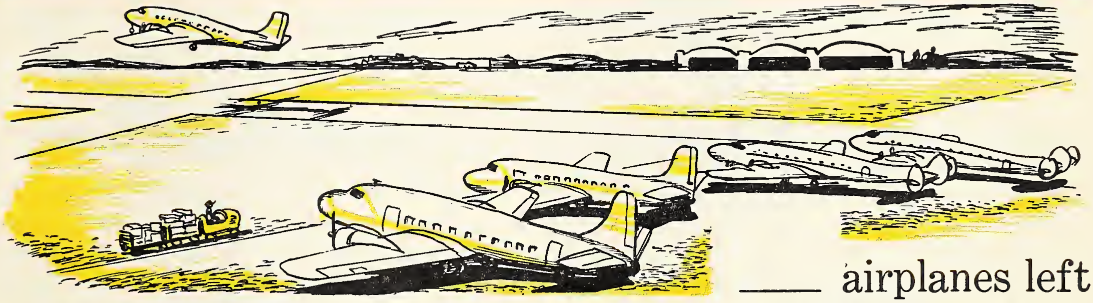
Enrichment activities. The children who do not need help at this time may use some of the materials on the arithmetic table. If they wish to do so, they may make up number stories for others in the group to answer without the aid of pictures or dramatization. The teacher may tell some number stories for them also, if time is available. Since these are the faster learners, they may not need help from the teacher.



____ wagon left



____ train left



____ airplanes left

Take away, and tell how many are left.

5 rabbits	4 cakes	2 dolls	4 beds
4 rabbits	2 cakes	1 doll	3 beds
____rabbit	____cakes	____doll	____bed

4 kittens	3 boats	3 trees	5 hats
1 kitten	2 boats	1 tree	1 hat
____kittens	____boat	____trees	____hats

MAINTAINING SKILL IN TELLING TIME

Preparatory Activities

The exercise on page 124 of the pupil's book is planned to give the children an opportunity to use the things they have learned about telling time. Two kinds of experiences in telling time are provided on the page.

Using realistic experiences. The teacher has probably taken many opportunities to have the children tell time and to associate time with the events of the school day. However, an effort should be made at this time to review the things the children have learned. This review should be based upon actual experiences with clocks which can be manipulated.

The children may use their paper plate or cardboard clockfaces to show what time their favorite radio or television programs come on the air, if they begin on the hour. They may set the clocks to show the time and put them on the chalk tray below the blackboard. Various children may tell the hours shown on the clockfaces.

Then the clocks may be set for each event of the school day that begins on the hour. The children may tell the time and tell what happens at that time.

A very large clockface may be drawn on the blackboard with the minute hand on the 12. The children may take turns drawing the hour hand to show the hours in order from 1 to 12. The hour hand must be erased, of course, each time a new hour is to be shown. In this way the children follow the hour hand around the clock from 1 o'clock to 12 o'clock.

One child may tell what hour he wishes shown on the clockface. Another child may draw the hour hand to show this time. If he succeeds in doing so correctly, he may choose another child and tell him what time to show on the clockface.

Using Page 124

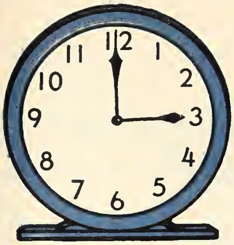
The exercises in the book enable each child to do independently the things he has done with the group. In the first exercise the children are to write on the line the time shown by the clock above it.

In the next exercise, they are to read the number below each clock and complete the clockface so that it shows that hour. The teacher will wish to explain that the hand which is already on the clock is the long hand (the minute hand), and that they are to draw the short hand to show the hour.

Follow-up Activities

Additional learning helps. If there are any children who need more help with telling time to the hour, the teacher will wish to have them use, for experiences in telling time, a clock whose hands are synchronized. These children probably need to retrace all of the learning steps. They may learn how long it takes the hour hand to go from one number to the next, and how far around the clockface the minute hand goes in that time. Then they may set the clock to show a specific hour. They may also tell what time the clock shows when it is set at various hours.

Enrichment activities. The faster learners may be interested in learning about the calendar. If a large calendar for the month is posted in the room, they may learn the days of the week. They may find what day it was when the month began and on what day it ends. They may write the dates which fall on Sunday. They may circle the birthdays of children in the room, etc.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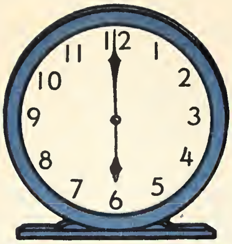
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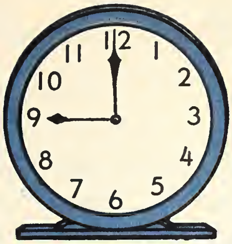
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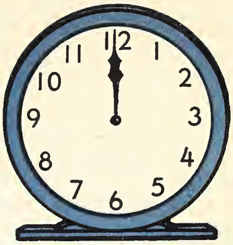
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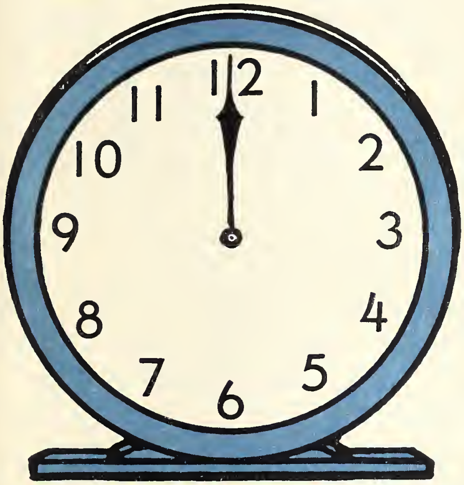
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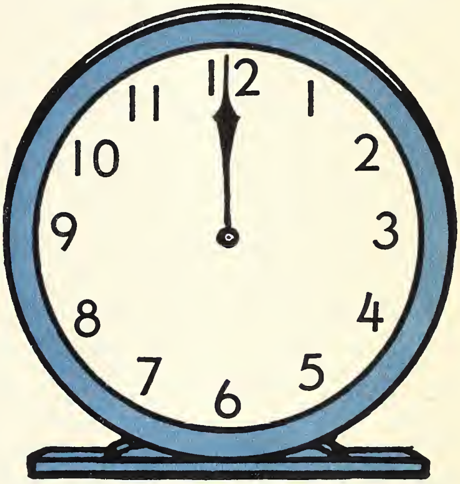
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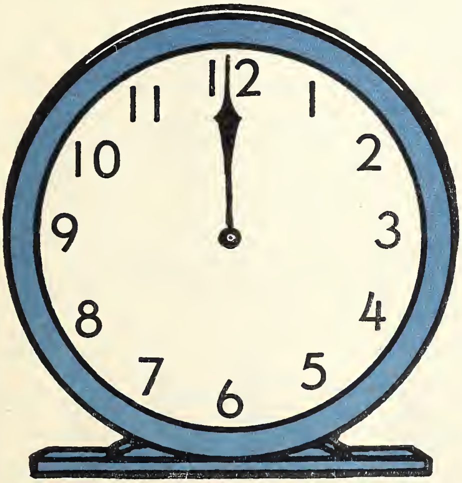
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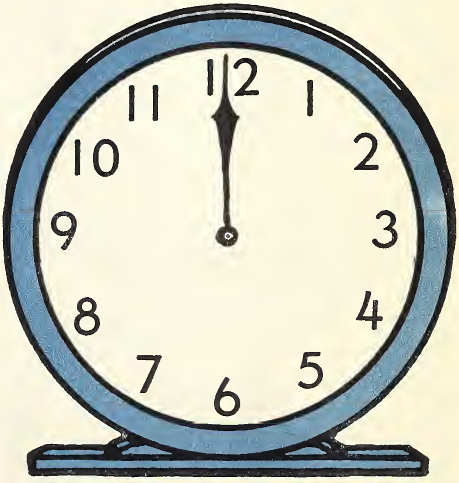
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8

LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

Two new subtraction facts, 3 from 5 is 2, and 2 from 5 is 3, are introduced on page 125.

Using informal arrangements. The teacher may arrange, in an informal group, 5 objects, such as books. There may be 3 large books and 2 small books, with 2 of the books open. These questions may be asked:

How many books are on the table? How many are large? How many are small?

How many books are there in all? How many are open? How many are closed?

The children may draw 5 flowers. Have them make flowerpots for 3 of them. Ask:

How many flowers did you draw? How many of them are in flowerpots? How many are not in pots?

Have the children draw 5 more flowers, and vases for 2 of the flowers. Ask:

How many flowers did you draw? How many are in vases? How many are not?

Using dramatization. The children may dramatize these number stories to discover the subtraction facts:

One day there were 5 toy cowboys in a toy shop. A boy bought 3 of the cowboys. How many cowboys were left in the shop? 3 cowboys from 5 cowboys is how many cowboys?

There were 5 storybook dolls in the toy shop. Alice bought 2 of the dolls. How many storybook dolls were in the shop then? 2 dolls from 5 dolls is how many dolls?

Using concrete objects. The children may build the facts with counting objects while the teacher gives these directions:

Place 5 counters on the desk. Take 3 of them away. How many are left when you take 3 counters from 5 counters?

Place 5 counters on the desk again. Take 2 of them away. How many are left when you take 2 counters from 3 counters?

Using Page 125

Let the children discover that some of the Indian bowls are blue and some are black. Have them read and answer the questions in order.

The teacher may tell this number story while the children study the pictures:

Five Indians were making a tepee. Three of the Indians went hunting. How many Indians were making the tepee then?

Have the children say the answer. Then they may read the direction and follow it. Have them read the fact, "3 Indians from 5 Indians is 2 Indians."

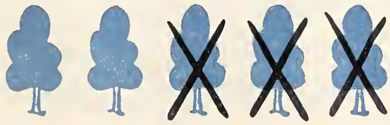
Tell this story for the next pictures:

There were 5 Indian canoes on the bank of the river. The Indians took 2 of the canoes to go fishing. How many canoes were left on the river bank?

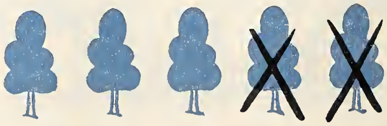
After the children say the answer, they may read the direction and follow it. Then they may read the fact, "2 canoes from 5 canoes is 3 canoes."

Follow-up Activities

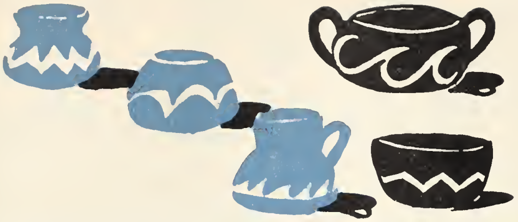
Additional learning helps. The children who require help may build the facts with their counting objects and say the facts three or four times. Then they may make illustrated fact cards for them similar to the cards shown below.



Take 3 from 5. ____ left



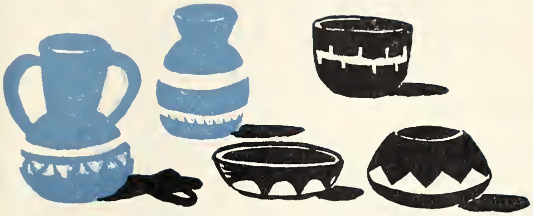
Take 2 from 5. ____ left



How many in all? ____

How many are blue? ____

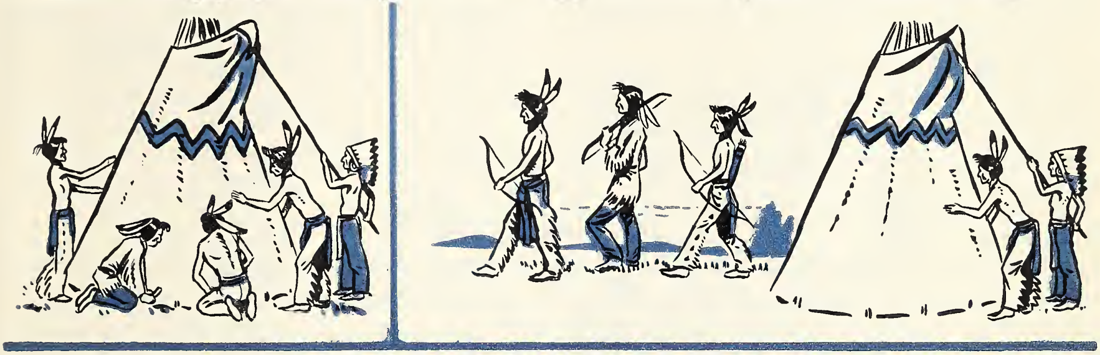
How many are black? ____

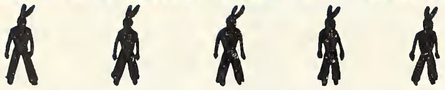


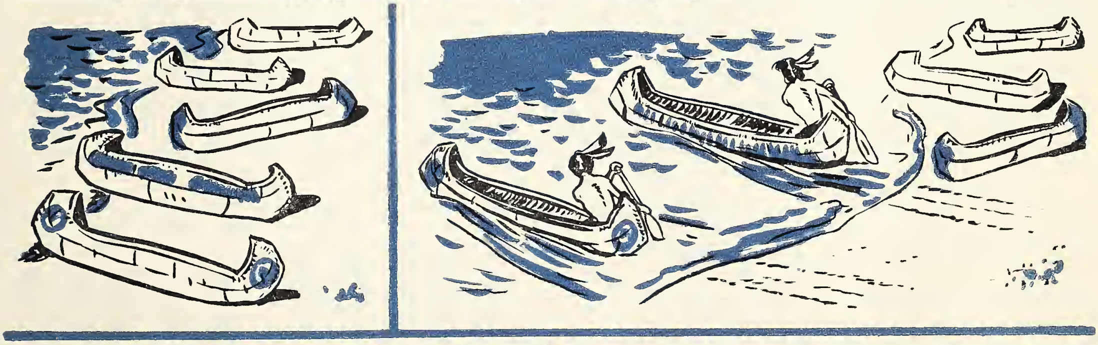
How many in all? ____

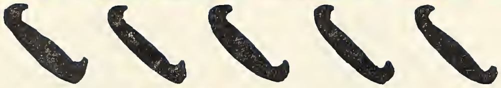
How many are blue? ____

How many are black? ____



Take 3 from 5.  ____ left



Take 2 from 5.  ____ left

USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

The new facts are used on page 126 of the pupil's book in oral number stories illustrated by action pictures. The children will write the facts in vertical form and state the facts orally. They will use various subtraction facts in examples.

Using dramatization. The children may dramatize the following number stories. Then they may say the answers to the questions in the problems.

One day 5 baby foxes were playing near an Indian camp. An Indian caught 3 of the foxes. How many baby foxes were left?

There were 5 dogs in the Indian camp. An Indian boy took 2 of the dogs hunting. How many dogs were left in camp?

Using Page 126

Tell this story while the children study the picture at the top of the page:

Five Indian girls were making baskets. Three of the girls finished their baskets and went home. How many girls were making baskets then?

After the children answer the question, have them read the directions, trace the numbers, and write the answer. They should read the fact, "3 girls from 5 girls is 2 girls."

This story may then be told:

Five Indian boys were making a canoe. Two of the boys went hunting. Then how many boys were making the canoe?

Have the children answer the question. Then they may read the directions, trace the numbers, and write the answer. They may read the fact, "2 boys from 5 boys is 3 boys."

Have the children read the direction above the examples and follow it.

Follow-up Activities

Additional learning helps. If some of the children need more help with number stories, the teacher may help them think through the stories. Then the children may tell the stories in their own words and write the answers to the questions in the stories.

Those children, if there are any, who have not learned the two new subtraction facts may build them with their counting objects and say the facts several times.

If any of the children missed some of the examples, they may use the illustrated fact cards they have made to learn the facts they did not know.

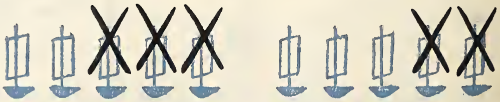
Enrichment activities. The faster learners who are making sets of study and practice cards for the arithmetic table may make cards for the new facts such as those shown at the bottom of this page.

The other children may wish to make up number stories and draw pictures to illustrate them. They may work with the counting sticks and number charts if they prefer to do so.

Front

3 from 5	2 from 5
5 boats 3 boats __ boats	5 boats 2 boats __ boats

Back



5 boats 3 boats 2 boats	5 boats 2 boats 3 boats

Take 3 girls from 5 girls.
Tell how many are left.

5 girls
3 girls
____ girls

Take 2 boys from 5 boys.
Tell how many are left.

5 boys
2 boys
____ boys

Take away, and tell how many are left.

3 toys
1 toy
____ toys

5 dolls
2 dolls
____ dolls

5 hens
3 hens
____ hens

5 beds
1 bed
____ beds

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

The exercises on page 127 of the pupil's book provide opportunities for the children to solve oral problems which are illustrated by action pictures and which use some of the subtraction facts that have been learned. Practice examples are provided at the bottom of the page.

Using dramatization. The teacher may tell some number stories which use the subtraction facts, to enable the children to visualize the subtraction process again through dramatization. These stories may be used:

Jane had 5 doll chairs at the doll table. She took 2 of the chairs away. How many chairs were left at the table?

Fred had 5 candy bars. He gave 4 of them to his friends. How many candy bars did Fred have then?

Charles had 3 turtles in his fish bowl. He gave 2 of the turtles to Mary. How many turtles did Charles have left?

Helen made 4 cakes for a party. She gave 1 cake to her aunt. Then how many cakes did Helen have?

Using Page 127

These stories may be told as the children study the pictures in their books. They will think of the answers for the questions and write them.

Sarah was taking 5 of her dolls for a ride in the wagon. When she went too fast, 3 of the dolls fell out of the wagon. How many dolls were riding then?

Elsie made 3 hats for her dolls. The puppy came and ran away with 1 of the hats. How many hats did Elsie have left?

Billy made 5 boats. One day he put them in the water. Four of the boats sailed away and were lost. How many boats did Billy have then?

Have the children read the direction above the examples and follow it. They should work independently.

Follow-up Activities

Additional learning helps. If there are any children who need more help with number stories, the teacher may tell stories or help the children make up stories. Then they may be asked questions to guide their thinking. After the children find the answers to these stories, the teacher may help them correct the mistakes they made in their books.

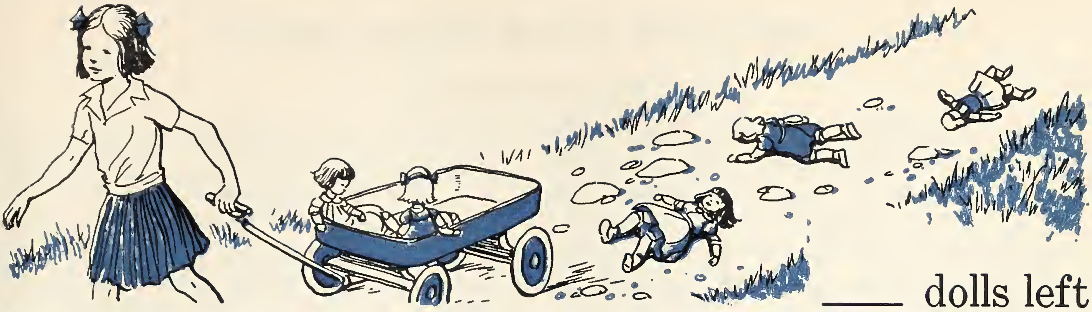
If any of the children made mistakes in the examples, they may be helped to find the study and practice cards for the facts they did not know. Each child should use the cards to learn the facts he missed. Then he should build the facts with his counting objects at his desk. Finally, he should say them three or four times.

The teacher will wish to keep a record of the facts each child missed to see if he knows them the next time they are used in an exercise.

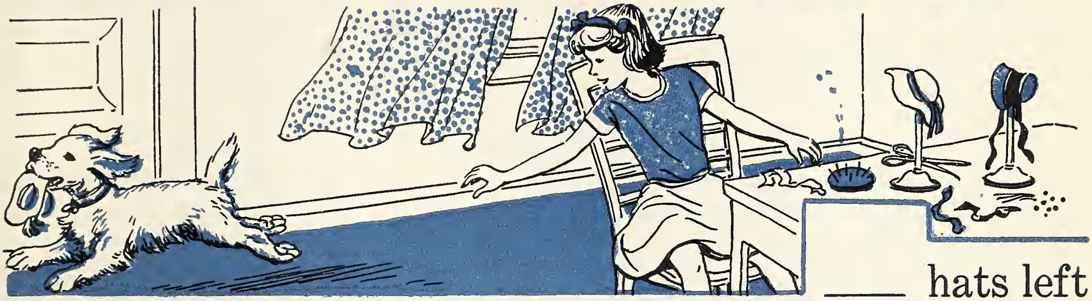
Enrichment activities. The faster learners may work with the teacher while the slower learners study the facts they missed. The teacher may tell some number stories and have the children write the answers. This will enable her to see how well the faster learners can find the answers without pictures, dramatization, or other aids to visualization. Such stories as these may be told:

One day 5 boys were making a cave. One of the boys went to eat lunch. Then how many boys were making the cave?

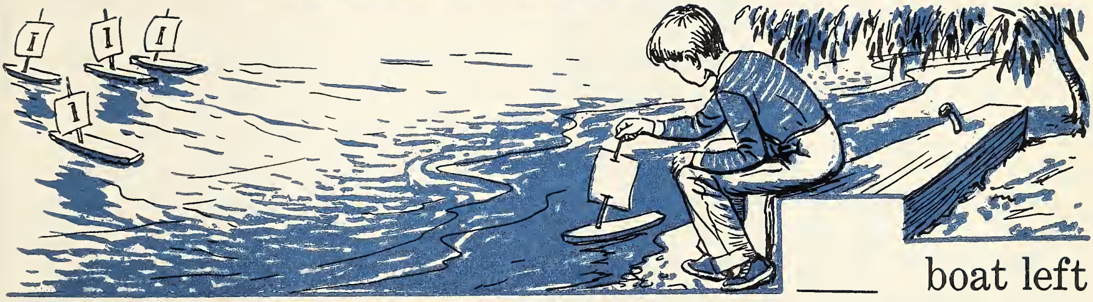
A freight train had 5 boxcars in it. The men took 2 of the boxcars out and put them on another track. How many boxcars were in the train then?



____ dolls left



____ hats left



____ boat left

Take away, and tell how many are left.

5 pets	4 rabbits	5 ducks	2 dogs
1 pet	3 rabbits	2 ducks	1 dog
____pets	____rabbit	____ducks	____dog
3 pigs	5 chickens	4 ponies	5 cows
2 pigs	3 chickens	2 ponies	4 cows
____pig	____chickens	____ponies	____cow

MAINTAINING SKILL IN WRITING NUMBERS

Preparatory Activities

The exercises on page 128 of the pupil's book provide further opportunity for the children to practise writing the number that comes just before and the number that comes just after a certain two-place number. They are given another chance to recognize the number words *one* to *six*.

Using the number charts. Before they do the exercise in their books, the children may read from the chart they made for the numbers from 1 to 100 the numbers from 1 to 20, from 21 to 50, from 51 to 75, from 76 to 100. Then they may read the even numbers, the odd numbers, and those ending in zero.

The teacher may ask the children to find the number 57 on the chart and read the number that comes before and the number that comes after it. Then these numbers may be used in the same way: 24, 82, 40, 76, 39, 93, 50, 79, 58, 17, 45, and 85.

Using Page 128

The teacher may help the children fill the first two blanks. A child may read the number *68*. Then the teacher may say:

What number comes just before *68*? Write that number on the line at the left of the *68*. What number comes just after *68*? Write that number on the line at the right of *68*. Read each of the other numbers and write the number that comes before it and after it.

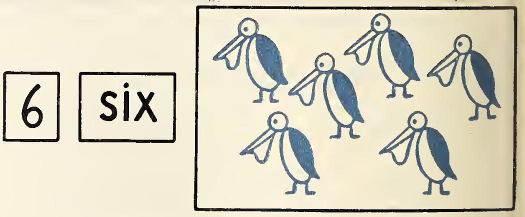
Have the children find how many objects (saddle, shirts, hats, canteens, lariats, neckerchiefs) there are in each picture and write the number on the black line. Call attention to the word *two*. Have the children draw a line from the word to the picture that shows two things. Then tell them to draw a line from each of the other number words to the picture that illustrates it.

Follow-up Activities

Additional learning helps. If any of the children had difficulty with the number sequence, they may be given square-ruled paper, with squares of about ½″, on which to write the numbers. The teacher may direct them to write the numbers *1* to *10* down the page at the left. Then they may write the numbers *11* to *20*, and so on. Writing the numbers in columns will help the children locate their mistakes if they omit a number or a decade.

After the chart is finished, the teacher may have each child use a colored pencil or crayon and put a line under the number *68*. Then he may put a box around the number that comes just before and the number that comes just after *68*. The other numbers in the exercise in the pupil's book may be handled in the same way.

If there are any children who were unable to recognize the number words *one* to *six*, the word cards, the number cards, and the group cards which were made earlier may be used again for matching exercises to help them learn the words. For example:

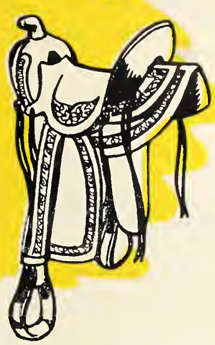


Enrichment activities. The children who do not need help at this time may make cards, putting each of the numbers to 100 on a separate card. Then they may play a matching game with the counting sticks. When a card is placed on the table, the child who first places enough bundles of ten and single sticks to illustrate the number wins the card. For example, if the card number is 57, each child places 5 bundles of ten and 7 single sticks on the table.

____68____ ____53____ ____89____ ____72____

____91____ ____47____ ____86____ ____39____

____80____ ____71____ ____60____ ____99____



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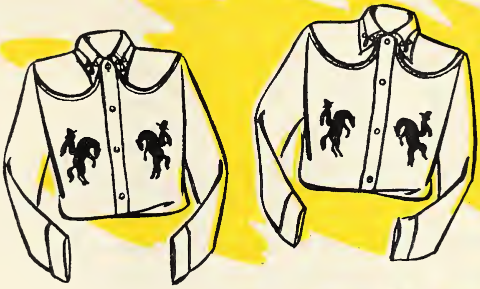

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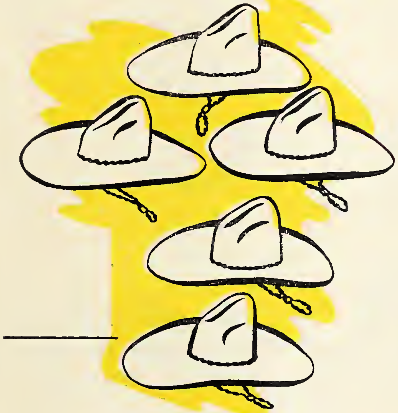
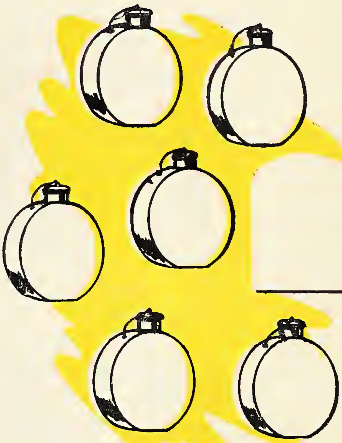


____

two
one
six
five
four
three



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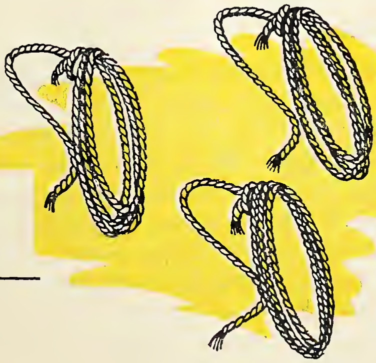

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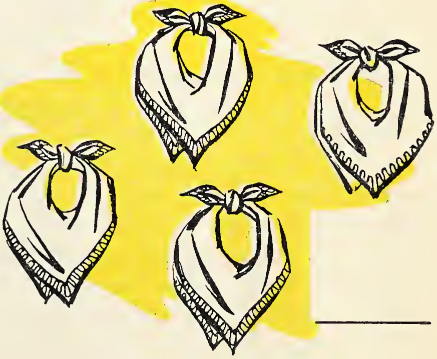

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MAINTAINING SKILL WITH NUMBERS FROM 101 TO 150

Preparatory Activities

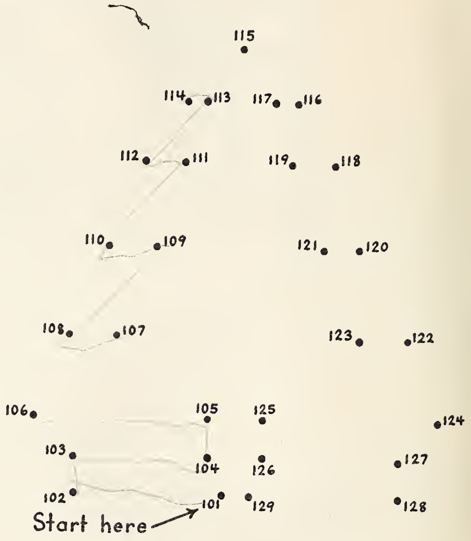
The exercise on page 129 of the pupil's book provides an opportunity for the children to demonstrate their ability to read and understand the sequence of numbers beyond 100. A motivated situation has been provided for this purpose.

Using the number chart. Before the children do the exercise in their books, they may have some practice in reading page numbers and locating pages in their books. The teacher may ask them to begin with page 101 and read the page numbers. Then she may ask them to find specific pages by number and describe the pictures on them.

The chart of the numbers from 101 to 150 (See page 256.) may also be used to give the children practice in reading the numbers. They may read the numbers from 101 to 110; 111 to 120; 121 to 130; and so on to 150. Then they may read the number that comes just before and the number that comes just after 140, and so on.

Following numbers to make pictures. To prepare for the exercise in the book, the teacher may make "pictures" on the blackboard, using the same technique as was used in the pupil's book.

This drawing can be made on the blackboard by cutting a large pine tree, with a rectangular base and with five points, from folded paper. Unfold the tree, hold it against the blackboard, and place dots at all of the points and indentations. Then number the dots, beginning with 101 on the base, and continuing around the tree and back to 129 on the base. The children connect the dots.



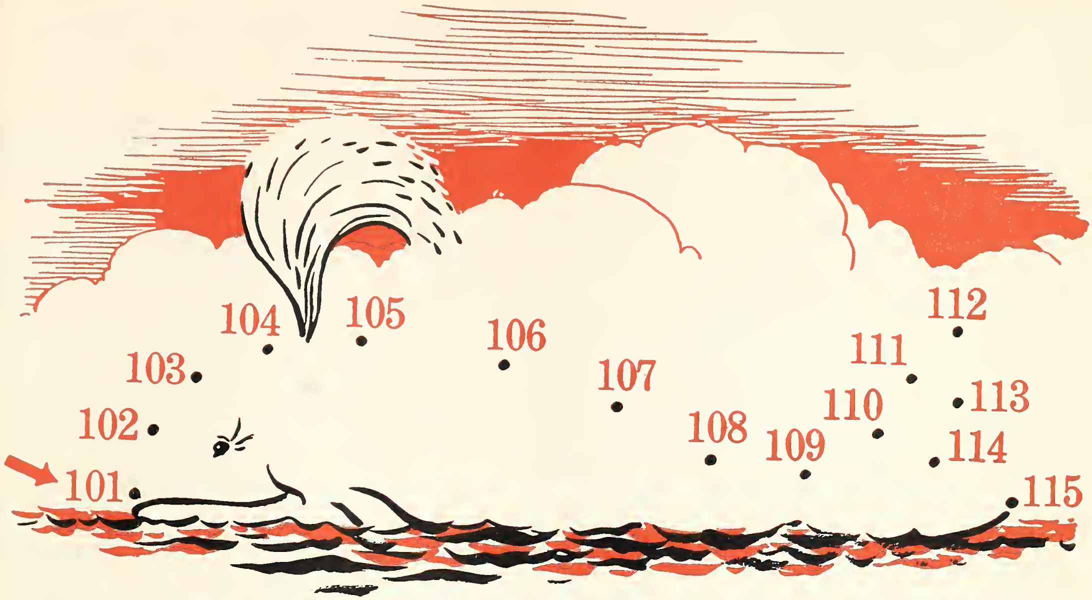
Using Page 129

Let the children guess what the pictures will be. Then tell them to follow the dots and make pictures. Help them find 101, begin there, and draw lines from one numbered dot to the next. The picture ends at 115. In the next picture, they begin with 125 and connect the numbered dots in sequence. The picture ends at 150.

Follow-up Activities

Additional learning helps. If any of the children need more help in learning to read numbers from 101 to 150, they may use the chart again. The experiences suggested as preparatory activities may be given again. Since the children will read large numbers frequently in locating stories in books, it will be advantageous to find books with tables of contents and let these children practise finding the pages on which stories begin and locating the stories.

Enrichment activities. The children who do not need help at this time may use the counting sticks, in bundles of 100 and of 10, and single sticks, to show what some of the larger numbers mean. Other children may wish to make a game, writing each number from 101 to 150 on a separate card. The cards may be turned up one at a time. If the child whose turn it is can read the number correctly, he "wins" the card. If not, the next child takes the turn, and so on.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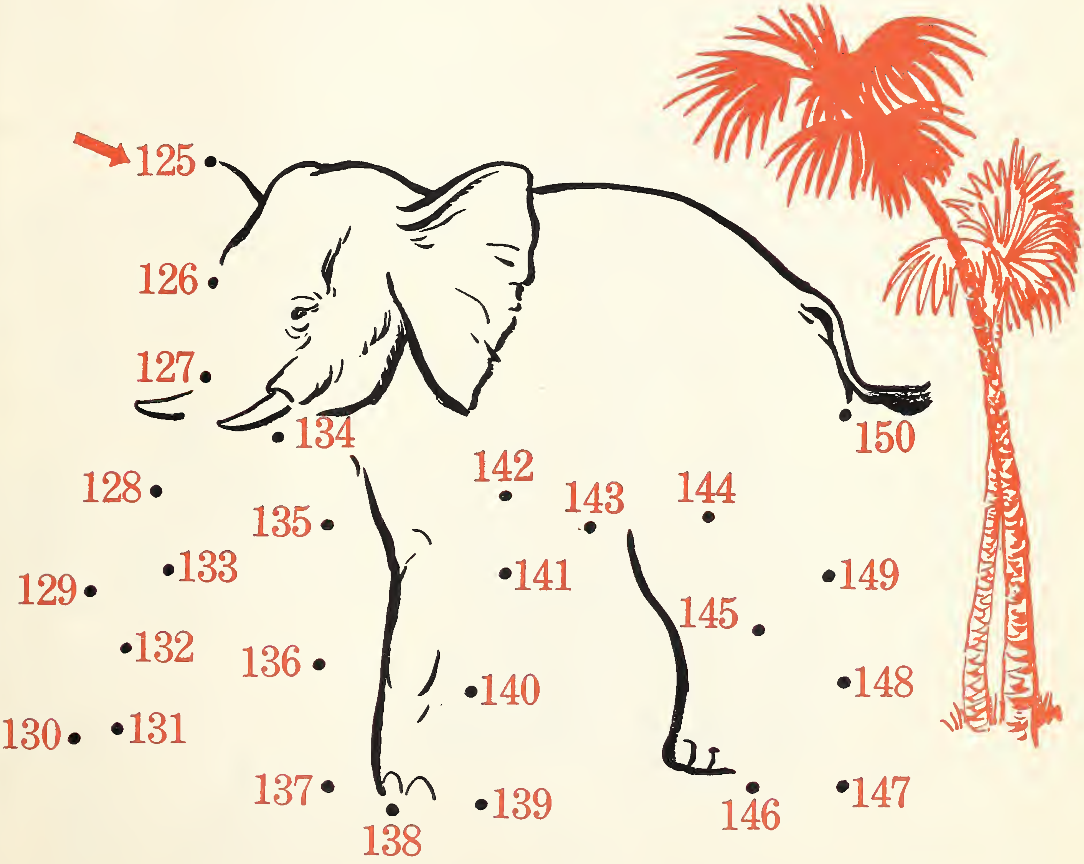
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149
150

LEARNING ONE MORE SUBTRACTION FACT

Preparatory Activities

The subtraction fact, 3 from 6 is 3, is introduced on page 130 of the pupil's book through action pictures and oral number stories. Experiences with groups of 6 are provided before the fact is introduced. The fact is also written in example form.

Using realistic arrangements. The teacher may arrange 6 girls at the table with 3 standing and 3 sitting. She may ask:

How many girls are at the table? How many are standing? How many are sitting?

Have the children draw 6 cherries, 3 of them with stems. Then ask:

How many cherries did you draw? How many have stems? How many do not have stems?

Using dramatization. This story may be told for the children to dramatize so that they can discover the new fact:

One day 6 pies were in the window of a bakery. A woman bought 3 of the pies. How many pies were left in the window? 3 pies from 6 pies is how many pies?

Using concrete objects. The children may build the new fact with counting objects as the teacher gives these directions:

Put 6 counters on the desk. Take 3 of them away. How many are left when you take 3 counters from 6 counters?

Using dramatization. Perhaps a child can tell a number story that uses the new fact. If not, this story may be dramatized:

Tom had 6 wagons fastened together to make a train. Three of the wagons came loose. How many wagons were in the train then?

Have the children say the answer to the question in the story.

Using Page 130

Have the children study the picture of cars. They may read and answer each question in turn.

Then tell this number story:

Six monkeys were playing with hats. Three of the monkeys went away. Then how many monkeys were playing with hats?

After the children answer the question, they may read the direction and do as it says. Then they may read the fact, "3 monkeys from 6 monkeys is 3 monkeys."

Tell this story for the last picture:

Six circus dogs were balancing balls on their noses. Then 3 of the dogs went to do another trick. How many dogs were left?

Have the children read the sentences, write the example, and read the fact, "3 dogs from 6 dogs is 3 dogs."

Follow-up Activities

Additional learning helps. If some of the children need more help with the new fact, they may use it in a number story and dramatize the story. Then they may build the fact with their counters and say it several times. The children should make an illustrated fact card like the one below.

Take 3 from 6. ____ left

Enrichment activities. The faster learners may make study and practice cards, as shown below. They may also wish to make up number stories that use the new fact and play them with paper puppets. (See page 226.)

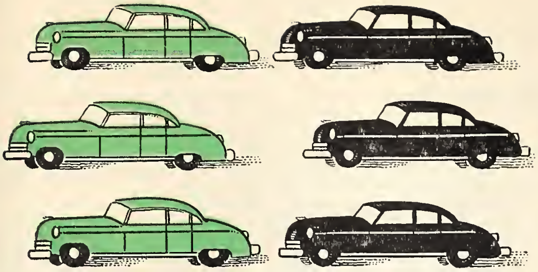
Front

3 from 6

6 balls
3 balls
__ balls

Back

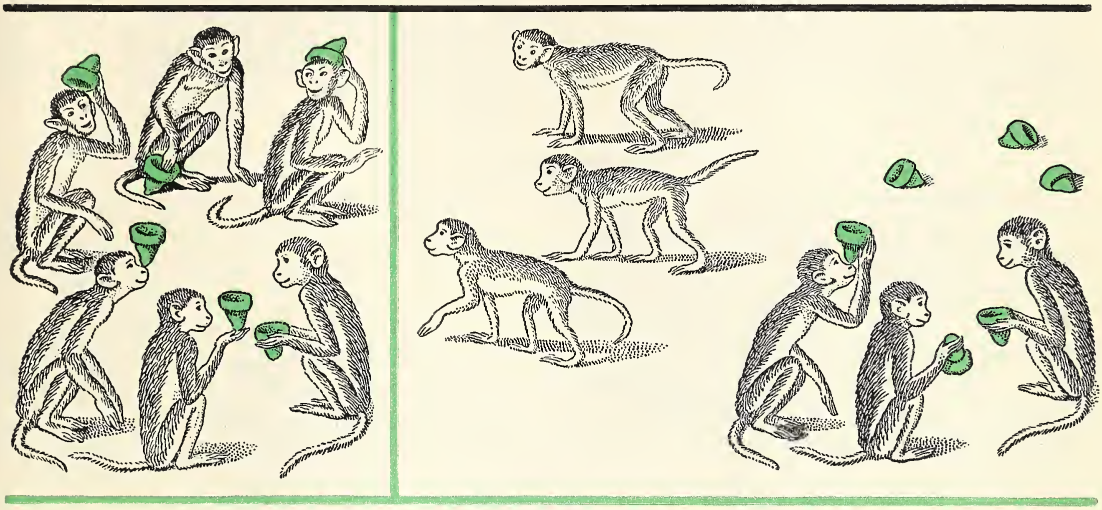
6 balls
3 balls
3 balls

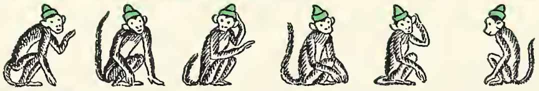


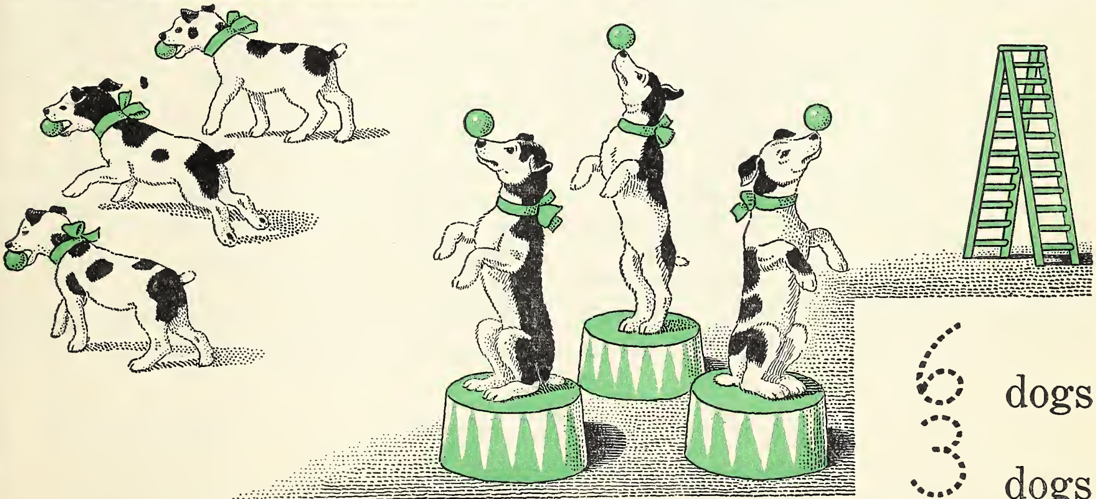
How many in all? ____

How many are green? ____

How many are black? ____



Take 3 from 6.  ____ left



6 dogs

3 dogs

Take 3 dogs from 6 dogs.
Tell how many are left.

____ dogs

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Action pictures that illustrate oral number stories, and practice examples, are provided on page 131 of the pupil's book.

Using dramatization. The children may be given these oral number stories to dramatize before they use their books:

Bob had 4 pet rabbits in his pen. He gave 2 of the rabbits to Alice. How many rabbits did Bob have left?

Ann had 5 ice cream cones. She gave 4 of them to her friends. How many ice cream cones did Ann have then?

Betty made 4 animals out of soap. Three of the animals got broken. How many animals did Betty have left?

James had 5 nickels in his pocket. He spent 2 of them. Then how many nickels did James have?

Using Page 131

The teacher may tell these stories while the children study the pictures and write the answers for the questions in the stories:

There were 4 dogs asleep in their basket. One dog woke up and went to play. Then how many dogs were asleep?

One day 5 rabbits got into the farmer's garden. One rabbit ran away. How many rabbits were in the garden then?

Six baby chickens were drinking water. Three of the chickens went to find some food. How many chickens were drinking water then?

The farmer had 5 ponies in the barnyard. Two of the ponies went into the barn. How many ponies were left in the barnyard?

Have the children read the direction above the examples and follow it.

Follow-up Activities

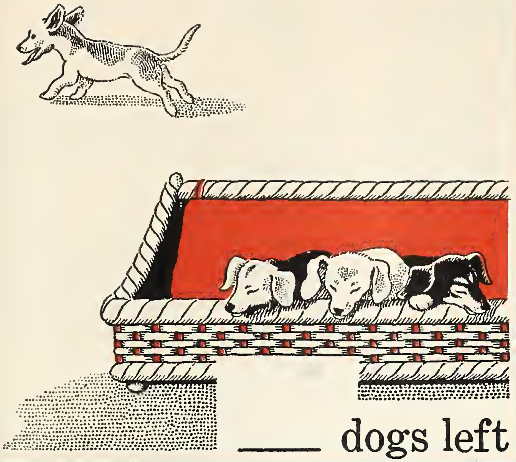
Additional learning helps. If there are any children who had trouble with the number stories, they may be helped by the teacher to tell the stories from the pictures. The teacher may encourage the children to recall how each story started. This will give them experience in thinking of the whole group in the picture before they think of the subgroups—the subtrahend and the remainder. Perhaps such experiences will help them in the future to listen carefully to all of the details in the stories.

After the children have worked with the stories in their books again, they may make up number stories to tell and dramatize.

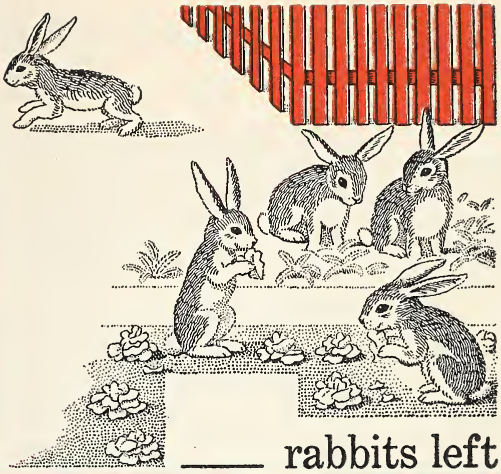
If there are children who did not know some of the subtraction facts, the teacher may help them find the study and practice cards for the facts they missed. The children may work with these cards and their illustrated fact cards to learn the facts they missed.

Enrichment activities. The children who do not need help at this time may work with the materials on the arithmetic table. While the slower learners learn the facts they missed, the teacher may help the faster learners make up and tell number stories. They may see how well they can find the answers without pictures or dramatization.

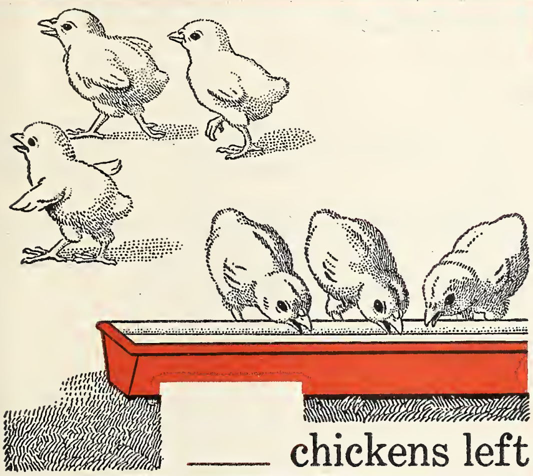
Notes



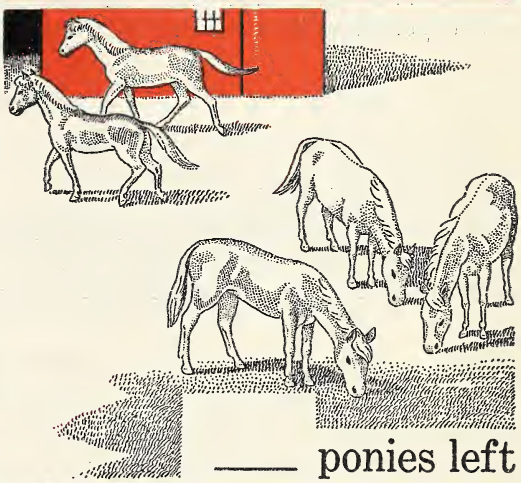
____ dogs left



____ rabbits left



____ chickens left



____ ponies left

Take away, and tell how many are left.

5 rabbits	3 kittens	5 pigs	6 hens
2 rabbits	1 kitten	4 pigs	3 hens
____rabbits	____kittens	____pig	____hens

5 chickens	4 ducks	5 cows	4 pets
1 chicken	2 ducks	3 cows	1 pet
____chickens	____ducks	____cows	____pets

USING THE FRACTION *ONE-HALF*; TERMS

Preparatory Activities

On page 132 of the pupil's book, maintenance exercises are provided which enable the children to maintain their skill in recognizing the fraction *one-half*, and in using the terms *above* and *below*, and *longer* and *shorter*.

Using realistic experiences. These experiences, or similar ones, may be given:

Give the children several sheets of art paper and ask them to cut the paper to make arithmetic cards. Tell them that they should cut the paper so that two cards the same size can be made from each sheet. Discuss the way to get pieces the same size, what we call each piece, etc. Let the children try to cut paper plates, apples, pieces of string, etc., into halves. Let them find whether or not each piece is actually one-half.

Review the terms *above* and *below* in connection with pictures on the blackboard or the bulletin board. Then apply the terms to pictures in the arithmetic book, to the numbers in examples, etc.

The terms *longer* and *shorter* may be reviewed by comparing pencils, pieces of paper, rulers, etc. Then lines may be drawn on the blackboard, and the longer and shorter lines identified.

Using Page 132

Have the children find the pie that is cut in half and put an X above it. Then have them color one-half of the pie.

Help the children discover that one picture frame is above the green line and the other is below the green line. Have them draw a car in the picture frame that is above this line, and a tree in the picture frame that is below it.

Have the children draw a shorter fish above the green fish. Then have them draw a longer fish below the green fish.

Follow-up Activities

Additional learning helps. If any children need help with the fraction *one-half*, the teacher may use paper plates or sheets of paper to demonstrate these facts:

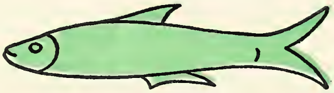
We get *one-half* of a plate or a piece of paper by cutting it into two pieces that are just the same size. Each piece is called *one-half*. There are two halves in one thing.

The children can cut one paper into two unequal pieces and another into two equal pieces. They can determine which pieces are halves by placing one piece over the other to find which two are just the same size.

If the children need help in understanding the terms *above* and *below*, and *longer* and *shorter*, experiences such as those suggested as preparatory activities may be given again.

Enrichment activities. The children who do not need help at this time may use the materials on the arithmetic table.

Notes



LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

The subtraction facts, 5 from 6 is 1, and 1 from 6 is 5, are introduced on page 133 of the pupil's book.

Using informal arrangements. The teacher may place 6 pictures on the bulletin board or the blackboard. Five may be large and one small. One picture may show an animal, while the others may show children.

The teacher may ask these questions:

How many pictures are there? How many have children in them? How many have animals?

How many pictures are there? How many are small? How many are large?

Have the children draw on their papers 6 Indian tepees. Have them put designs on 5 of the tepees. Then ask:

How many tepees did you draw? How many have designs on them? How many have not?

Have the children draw a fire in front of 1 tepee. Then ask:

How many tepees are there? How many have fires? How many have not?

Using dramatization. These number stories may be dramatized:

One day 6 boxes of crayons were on the teacher's desk. She gave 5 boxes to the children. How many boxes of crayons were left on the desk? 5 boxes from 6 boxes is how many boxes?

There were 6 storybooks on the table. Mary took 1 of them to read. Then how many books were on the table? 1 book from 6 books is how many books?

Using concrete objects. The children may build the facts while the teacher gives these directions:

Put 6 counters on the desk. Take 5 of them away. How many are left when you take 5 counters from 6 counters?

Put 6 more counters on the desk. Take 1 of them away. How many are left when you take 1 counter from 6 counters?

Using Page 133

Have the children study the pictures of trucks, and read and answer each question.

This story may be told while the children study the pictures of the lions:

Six lions were drinking at a water hole. Five of the lions went away. How many lions were left at the water hole?

Have the children read and follow the direction. Then they may read the subtraction fact in this way, "5 lions from 6 lions is 1 lion."

Tell this story about the zebras:

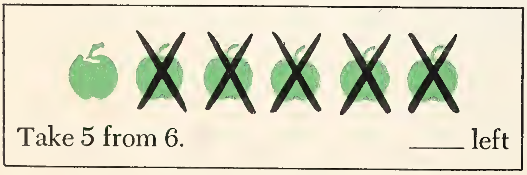
Six zebras were drinking at the water hole. One of the zebras went away. Then how many zebras were drinking?

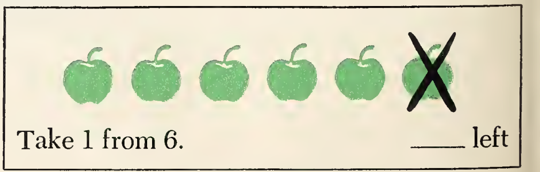
Have the children read and follow the direction, and say the subtraction fact, "1 zebra from 6 zebras is 5 zebras."

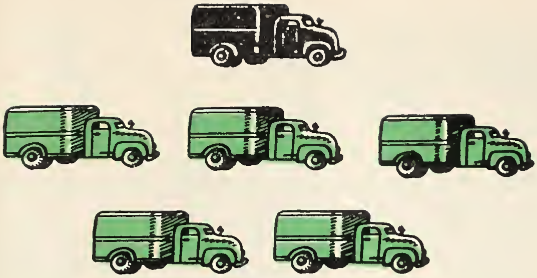
Follow-up Activities

Additional learning helps. If any children need help, they may make up stories to dramatize. Then they may build the facts with counting objects. Illustrated fact cards may then be made as shown below.

Enrichment activities. The faster learners may make pictures to illustrate number stories that use the new facts. The stories may be put in their arithmetic folders or scrapbooks.



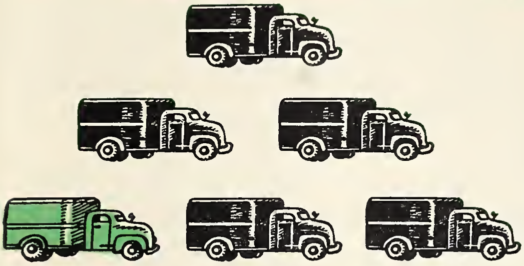




How many in all? ____

How many are green? ____

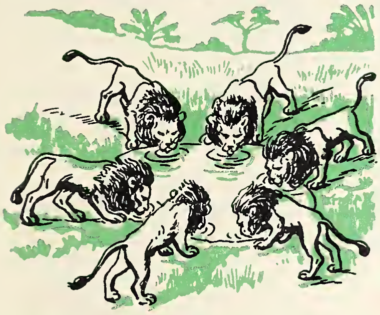
How many are black? ____

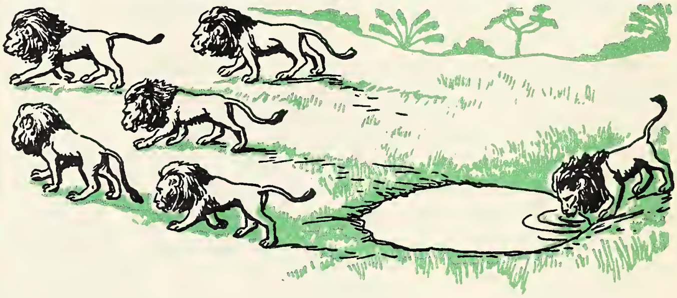


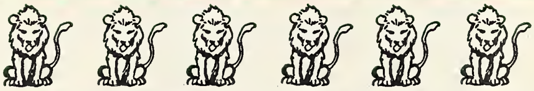
How many in all? ____

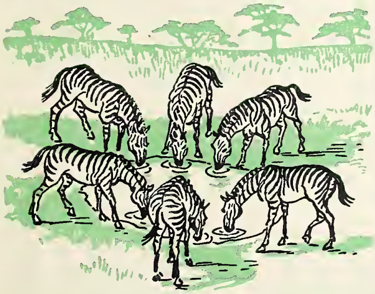
How many are green? ____

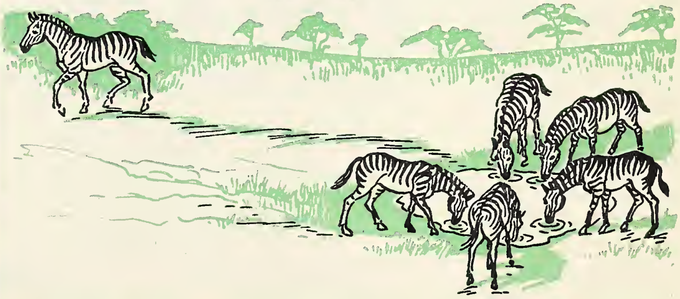
How many are black? ____

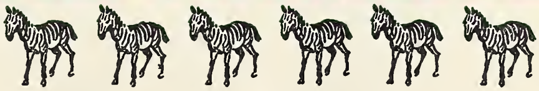




Take 5 from 6.  ____ left





Take 1 from 6.  ____ left

USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

On page 134 of the pupil's book the two new facts are used in number stories. Then the children will write the facts in vertical form. Practice examples that use these and other facts which were previously learned are provided also.

Using dramatization. Stories that use the new facts may be told and dramatized. The children may answer the questions in the stories. These stories, or similar stories planned by the teacher, may be used:

Jerry had 6 toys on a shelf in his room. He took 5 of the toys outdoors to play with. How many toys were left on the shelf?

The boys and girls brought 6 pets to school for a pet show. One pet got out of his box and ran away. How many pets were in the show then?

Using Page 134

The children may anticipate what the stories will be about by studying the pictures. Perhaps some of the children can tell the stories from the pictures. These stories may be used:

One day 6 girls had a tea party in the yard. Five of the girls had to go home for dinner. How many girls were left?

Have the children say the answer. Then they may read the directions and complete the example. After they write the answer for the example, the children may read the fact in the following way: "5 girls from 6 girls is 1 girl."

Then this story may be told:

Six boys were painting the fence. One of the boys went after more paint. Then how many boys were painting?

After the children answer the question in the story, they may complete the example. They may then read the fact, "1 boy from 6 boys is 5 boys."

The children may read the direction above the examples and do as it tells them.

Follow-up Activities

Additional learning helps. If there are any children who need more experience with the new facts, they may be helped to use them in several number stories. If they need to do so, they may dramatize some of the stories. Then the children may build the facts again with their counting objects and say the facts three or four times.

Enrichment activities. The faster learners may make study and practise cards for the facts for use at the arithmetic table. Some children may wish to make paper puppets and play number stories which they make up, using facts they know. Others may wish to play store or bank with the toy money or with real money.

Front

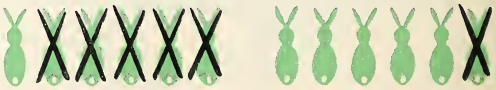
5 from 6

6 rabbits
5 rabbits
___ rabbit

1 from 6

6 rabbits
1 rabbit
___ rabbits

Back



6 rabbits
5 rabbits
1 rabbit

6 rabbits
1 rabbit
5 rabbits

6 girls

5 girls

Take 5 girls from 6 girls.
Tell how many are left.

____ girl

6 boys

1 boy

Take 1 boy from 6 boys.
Tell how many are left.

____ boys

Take away, and tell how many are left.

6 trees	5 balls	6 wagons	4 trains
1 tree	3 balls	5 wagons	3 trains
____trees	____balls	____wagon	____train

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Another exercise in learning how to solve problems is presented on page 135 of the pupil's book. Action pictures are provided to illustrate oral number stories to be told by the teacher. Practice examples in subtraction are provided also.

Using dramatization. The number stories given below, or similar stories which grow out of classroom activities, may be dramatized. The children may write the answers.

The children decided to have a store at school. They made some toys to sell in the store.

The children had 6 airplanes to sell. They sold 5 of them. How many airplanes did they have left?

There were 4 clothespin dolls to sell. Jane sold 1 of them. Then how many dolls did they have to sell?

The children made 5 wagons. They sold 3 of them the first day. How many wagons did they have then?

There were 5 boats to sell. The children sold 1 of them. How many boats were left?

The girls made 3 doll beds. They sold 1 of them. How many doll beds were left?

Using Page 135

The teacher may tell the children that they may study the pictures while she tells the number stories. Then they may think of the answers to the questions in the stories and write them. These stories may be told:

There were 5 hens scratching for food in their pen. Four of the hens went into the henhouse. Then how many hens were scratching for food?

Five pigs were in a mud hole. Two of the pigs came out and walked away. How many pigs were in the mud hole then?

Six cows were drinking from a water trough. Three of the cows went away. How many cows were at the water trough then?

Six kittens were in Bob's wagon. One kitten jumped out. How many kittens were in the wagon then?

Have the children read and follow the direction above the examples.

Follow-up Activities

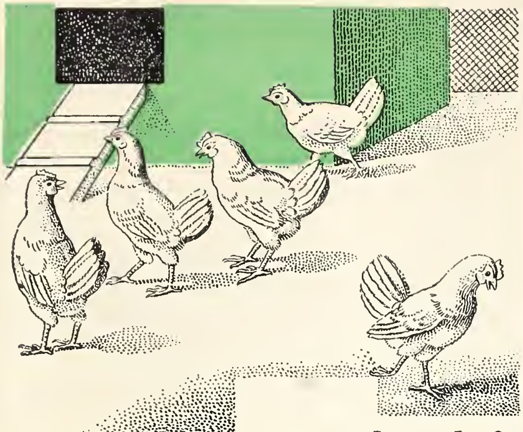
Additional learning helps. If any of the children had difficulty understanding the number stories, they may try again to interpret them. Having them study the pictures and retell the stories in their own words, while the teacher asks guiding questions, should help them learn how to think through the situations step by step. Such questions as these may be asked:

How many hens (pigs, cows, or kittens) were there at first? What were they doing? What happened in the story? What did the question ask?

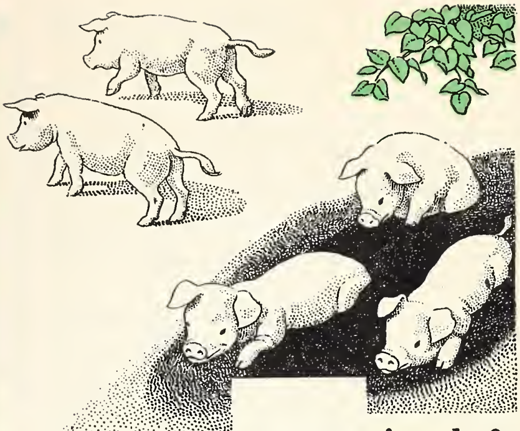
If any of the children missed subtraction facts, they should use the illustrated study and practice cards and their counting objects to learn the facts they missed.

Enrichment activities. The faster learners may make up, and tell to each other, number stories about the toy sale.

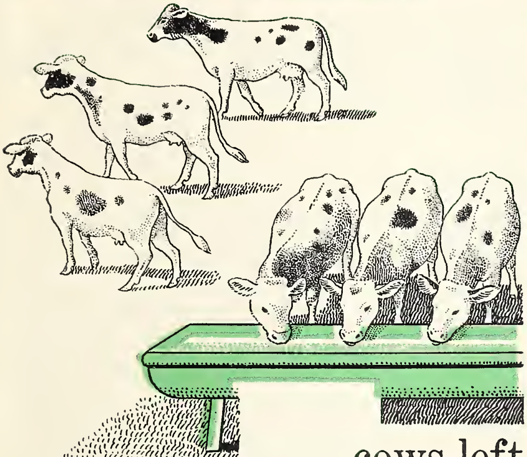
Notes



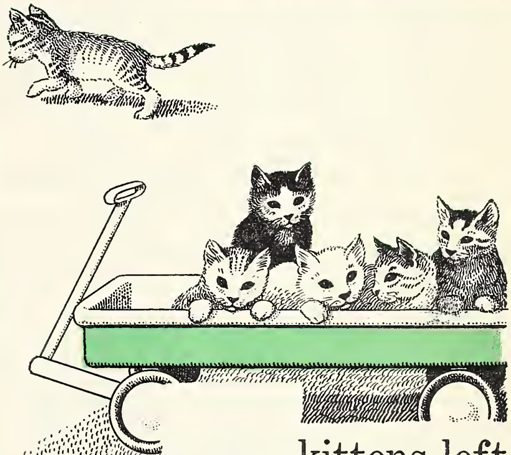
___ hen left



___ pigs left



___ cows left



___ kittens left

Take away, and tell how many are left.

5 trees	3 dogs	5 ducks	5 chickens
3 trees	2 dogs	4 ducks	2 chickens
___trees	___dog	___duck	___chickens

5 trains	6 pets	6 ponies	6 rabbits
1 train	5 pets	1 pony	3 rabbits
___trains	___pet	___ponies	___rabbits

MAINTAINING SKILL IN UNDERSTANDING MONEY

Preparatory Activities

The exercise on page 136 of the pupil's book was planned to help the children recall the relationships between nickels and quarters, dimes and half dollars, dimes and dollars, quarters and dollars, and half dollars and dollars.

Using realistic situations. The children may suggest things that can be bought for a nickel, a dime, a quarter, and a half dollar. Toy money and make-believe toys may be used to find the answers for the questions listed below:

How many 5-cent balloons can we buy for a quarter?

How many 10-cent cars can we buy for a half dollar? For a one-dollar bill?

How many 25-cent boats can we buy for a half dollar? For a one-dollar bill?

How many 50-cent trucks can we buy for one dollar?

Using Page 136

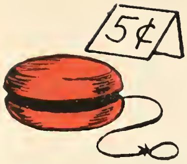
Have the children identify the toy in the first picture and tell how much it costs. (Explain the cent sign.) Then have them identify the coin in the picture at the right. Tell them to think how many of the toys they can buy for the coin, and write the number on the line. Proceed in the same way with each of the other exercises on the page.

Follow-up Activities

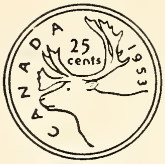
Additional learning helps. If there are any children who had difficulty with the exercises on page 136, they may be given another chance to learn the things they found difficult. The chances are that those who had difficulty need to learn that a quarter is as much money as 5 nickels; a half dollar is as much money as 5 dimes; a dollar is as much money as 10 dimes, 4 quarters, or 2 half dollars. These concepts can best be developed with real coins. The relationship between pennies and each of the other coins may be shown first. When it is understood that a quarter is as much money as 25 pennies, or cents, and that 5 nickels are as much money as 25 pennies, or cents, it can be seen that a quarter is as much money as 5 nickels.

The same approach can be made to the relationship between dimes and the half dollar, and dimes and the dollar. Then 100 pennies in 4 stacks of 25 can be placed beside 4 quarters, and the children can see by counting the quarters that 4 quarters are as much money as 100 cents. Since they know that a dollar is as much money as 100 pennies, or cents, they can see that a dollar is as much money as 4 quarters. The relationship between one dollar and 2 half dollars can be developed in the same way.

Enrichment activities. The children who do not need help at this time may play store, and buy things that can be paid for with pennies, nickels, dimes, quarters, half dollars, or a one-dollar bill. They may exchange pennies or nickels for quarters; pennies, dimes, or quarters for half dollars; etc.



Tell how many for



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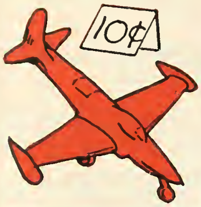
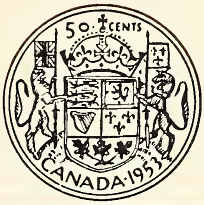


Tell how many for



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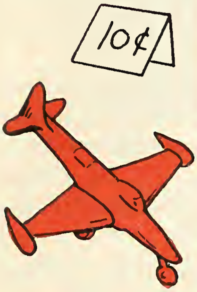
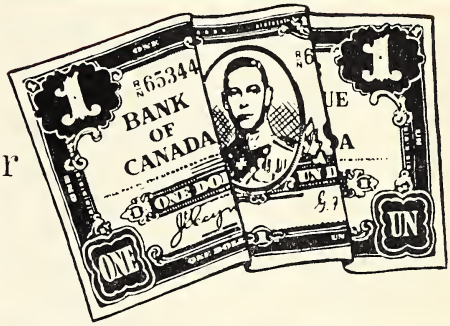


Tell how many for



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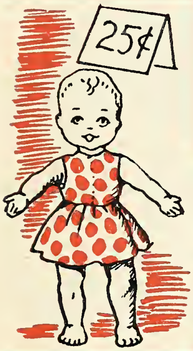
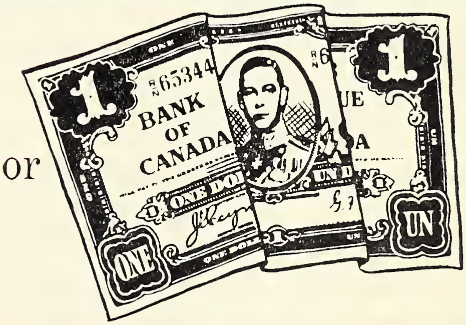


Tell how many for



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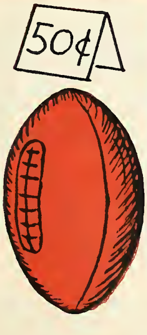
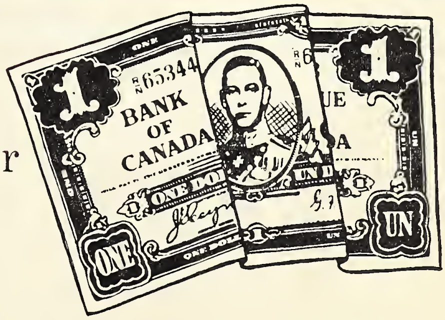


Tell how many for



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LEARNING TWO MORE SUBTRACTION FACTS

Preparatory Activities

The subtraction facts, 4 from 6 is 2, and 2 from 6 is 4, are introduced on page 137 of the pupil's book. Experiences are provided also in studying groups of 6 and discovering the subgroups of 4 and 2.

Using informal arrangements. A group of 6 children, 4 boys and 2 girls, may go to the blackboard. Two children may draw and 4 may write numbers. These questions may be asked:

How many children are there in the group? How many boys are there? How many girls?

How many children are there? How many of them are drawing? How many are writing numbers?

Have the children draw on paper 6 wagons. Have them put hay in 4 of the wagons. Ask:

How many wagons did you draw? How many of the wagons are filled with hay? How many are empty?

Have them draw 6 kites and put long tails on 2 of them. Ask:

How many kites did you draw? How many kites have long tails? How many do not have long tails?

Using dramatization. Have the children dramatize these stories:

Six monkeys were riding on a pony in the circus. Four of the monkeys fell off. Then how many monkeys were riding? 4 monkeys from 6 monkeys is how many monkeys?

Six seals were blowing horns in the circus. Two of the seals went to do another trick. How many seals were blowing horns then? 2 seals from 6 seals is how many seals?

Using concrete objects. Now let the children work at their desks with their counting objects, following these directions:

Put 6 counters on the desk. Take 4 of them away. How many are left when you take 4 counters from 6 counters?

Put 6 more counters on the desk. Take 2 of them away. How many are left when you take 2 counters from 6 counters?

Using Page 137

Have the children read the questions about the cars and write the answers.

Then tell this number story:

Six firemen were together at a fire. When the fire was under control, 4 firemen went to their trucks. How many of the firemen stayed behind?

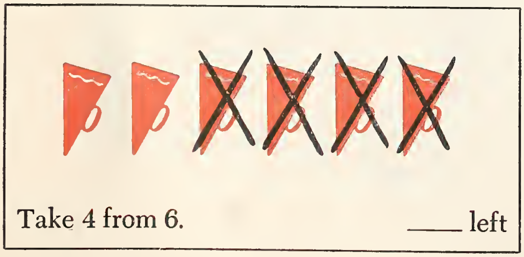
Have the children follow the direction, write the answer, and read the fact, "4 firemen from 6 firemen is 2 firemen." Then tell the following number story:

There were 6 fire trucks at a fire. When the fire was under control, 2 of the fire trucks drove off. How many fire trucks stayed behind?

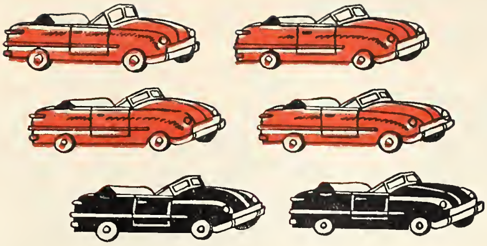
Have the children find and write the answer, and read the fact, "2 trucks from 6 trucks is 4 trucks."

Follow-up Activities

Additional learning helps. Those who need help may make illustrated fact cards.



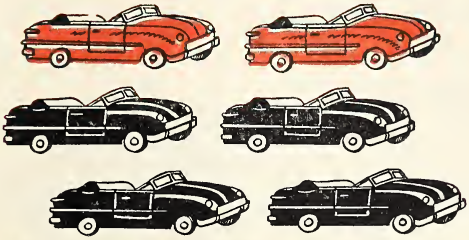
Enrichment activities. The other children may make up number stories.



How many in all? ____

How many are red? ____

How many are black? ____

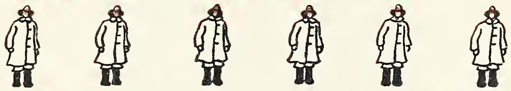


How many in all? ____

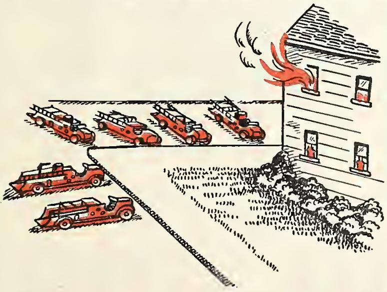
How many are red? ____

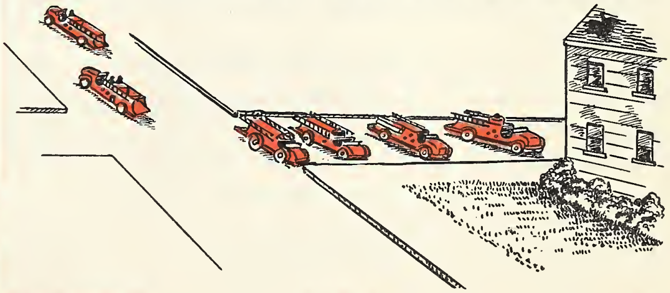
How many are black? ____

Take 4 from 6.

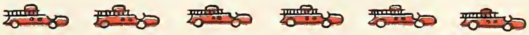


____ left





Take 2 from 6.



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USING SUBTRACTION FACTS IN STORIES AND EXAMPLES

Preparatory Activities

On page 138 the two new facts are used in number stories which are illustrated by action pictures.

Using dramatization. The children may dramatize the following number stories. Then they may say the answers to the questions in the problems.

Tim had 6 pet pigs in a pen. Four of the pigs got out and ran away. How many pigs did Tim have left?

Alice had 6 baby rabbits in a basket. Two of the rabbits climbed out of the basket and hopped away. How many rabbits were in the basket then?

Using Page 138

The children may study the picture at the top of the page while the teacher tells this story:

One day 6 girls went swimming. Soon 4 of the girls came out of the water. Then how many girls were swimming?

After the children say the answer, they may read the directions, complete the example, and read the fact, "4 girls from 6 girls is 2 girls."

The children may study the next picture while this story is told:

Six boys went fishing one day. Two of the boys got tired of fishing and went home. How many boys were fishing then?

Have the children read the directions, complete the example, and read the fact, "2 boys from 6 boys is 4 boys."

Have the children read the direction above the examples and follow it.

Follow-up Activities

Additional learning helps. If there are any of the children who did not understand the number stories, the teacher may help them retell the stories. They may use their counting objects, or paper figures, to play the stories. They may correct in their books the answers to the questions in the stories.

The teacher may tell three or four stories, such as this one, which can be demonstrated realistically:

John put 6 cans of paint on the table. Mary took 4 of them to use at the easel. How many cans were on the table then?

Have a child place the 6 cans of paint on the table. Let another child put her hands around 4 of them as if she were going to pick them up. Then have the children visualize the answer. They may write the example, but the teacher should write the words.

If any children had trouble with the examples, they should use the illustrated fact cards they have made to study the facts they missed. Then they may build the facts with concrete objects.

Enrichment activities. The faster learners may make illustrated study and practice cards for the new facts similar to the card shown below.

Front

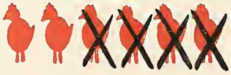
4 from 6

6 chickens
4 chickens
___ chickens

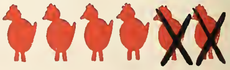
2 from 6

6 chickens
2 chickens
___ chickens

Back



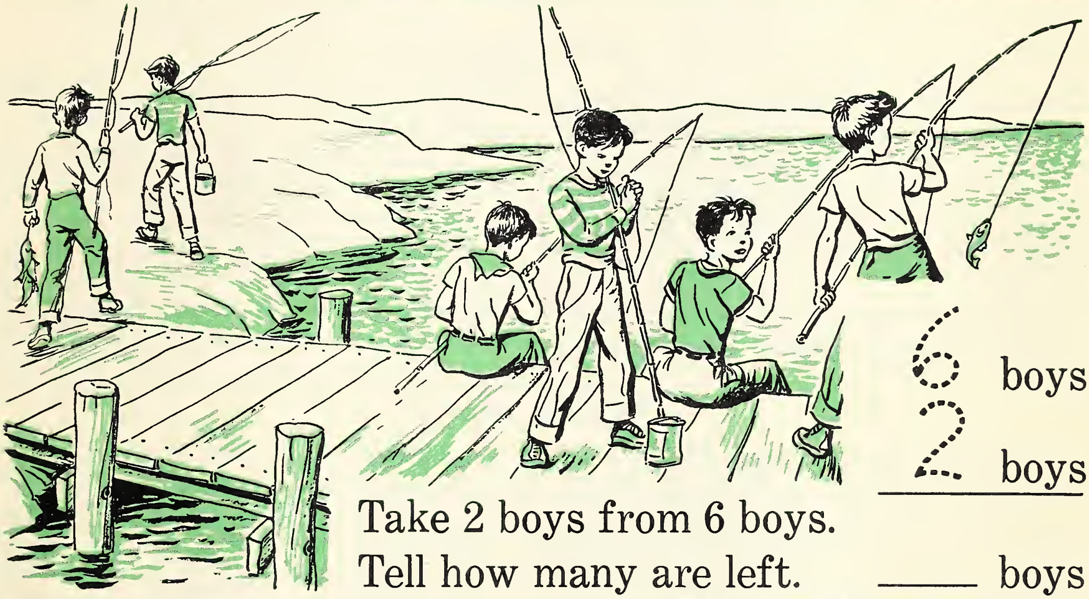
6 chickens
4 chickens
2 chickens



6 chickens
2 chickens
4 chickens

6 girls
4 girls
___ girls

Take 4 girls from 6 girls.
Tell how many are left.



6 boys
2 boys
___ boys

Take 2 boys from 6 boys.
Tell how many are left.

Take away, and tell how many are left.

6 pets	2 chickens	6 cakes	6 dogs
4 pets	1 chicken	3 cakes	2 dogs
___pets	___chicken	___cakes	___dogs

LEARNING HOW TO SOLVE PROBLEMS

Preparatory Activities

Another exercise in problem solving is provided on page 139 of the pupil's book. Action pictures are provided which illustrate number stories to be told by the teacher. The children will write the answers for the questions in the stories. Practice examples in subtraction are provided on this page also.

Using dramatization. The children may make up stories, or the teacher may tell stories for the children to dramatize, as an aid in interpreting number stories. The children may write the answers on the blackboard. The teacher may help them write the words that identify the answers.

Stories such as these may be used:

The children were having a play at Mary's house. Mary had 5 clown hats for the children to wear. The puppy took 1 of the hats and tore it apart. How many hats did Mary have left?

Mary asked 5 children to be clowns in the play. Two of them wanted to play they were ringmasters instead. How many children were left to be clowns?

Six boys were walking a tightrope in the play. Three of the boys fell off. How many boys were walking the rope then?

Four girls were riding an elephant in the circus. One of the girls got off of the elephant. Then how many girls were riding the elephant?

Mary had 5 kittens in the animal cage in the play. Three of the kittens ran away. How many kittens were left in the cage?

Using Page 139

The teacher may tell these stories while the children study the pictures and write the answers for the questions in the stories:

Edith had 6 dolls on the bench in the playroom. She took 2 of the dolls for a ride in the doll buggy. How many dolls were left on the bench?

Bob had 6 boats on a shelf in his room. He took 5 of the boats outside to sail on the pond. Then how many of his boats were left on the shelf?

Ben had 6 airplanes on the window seat in his room. He took 1 airplane to school. How many airplanes were left at home?

James had 6 balls in his toy chest. He took 4 of the balls to give to his friends. How many balls were in the toy chest then?

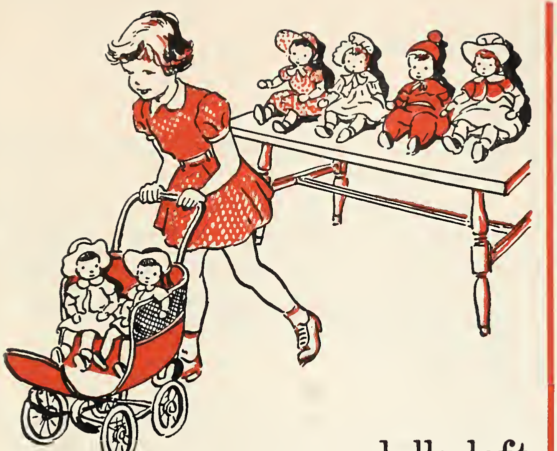
The children may do the examples.

Follow-up Activities

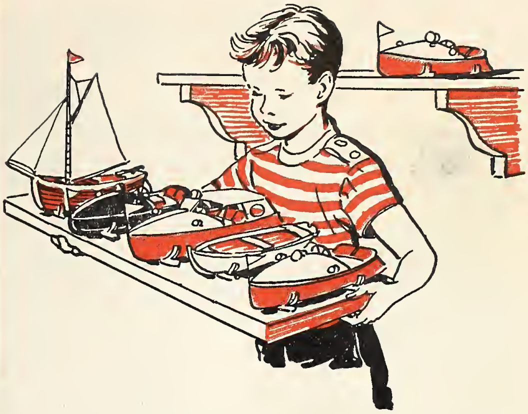
Additional learning helps. If any of the children had trouble with the number stories, the teacher may help them retell the stories from the pictures. They may use counting objects or other concrete objects to dramatize the stories, if that seems to be necessary. Then the children may make up similar stories and find the answers.

If there are children who missed some of the examples in the exercise, the teacher may help them find the illustrated study and practice cards for the facts they did not know. After each child studies the facts that caused him difficulty, he may build them with counting objects and practise saying them. The teacher may prepare another practice exercise with examples that use the facts the children missed to see if they have learned them.

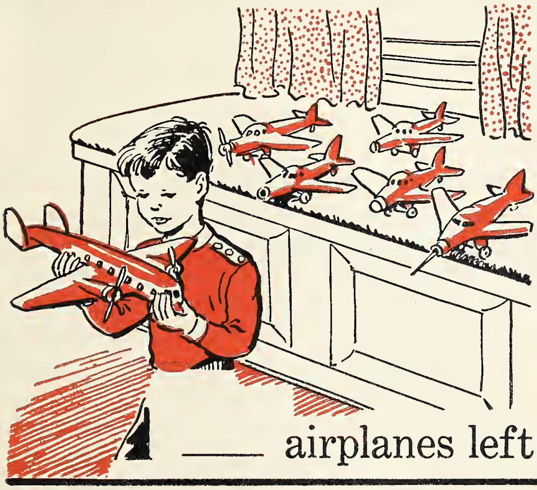
Enrichment activities. The children who do not need help at this time may find other things to do. Some children may wish to find pictures on the arithmetic table that can be used to illustrate number stories. Other children may wish to use the clockfaces to practise telling time, or the counting sticks to show what numbers mean.



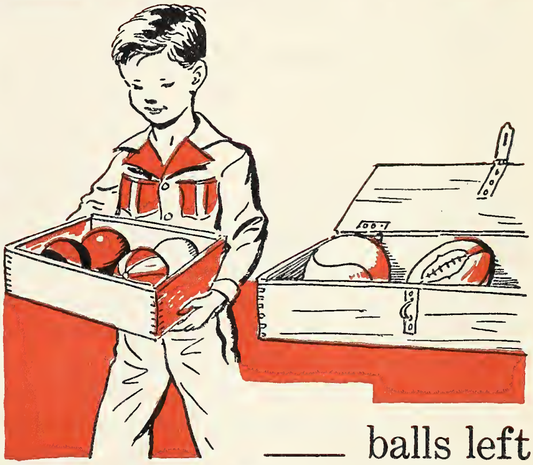
____ dolls left



____ boat left



____ airplanes left



____ balls left

Take away, and tell how many are left.

6 dogs	5 ponies	6 chickens	4 cows
5 dogs	3 ponies	4 chickens	1 cow
____dog	____ponies	____chickens	____cows

6 pigs	6 rabbits	5 kittens	6 hens
3 pigs	1 rabbit	2 kittens	2 hens
____pigs	____rabbits	____kittens	____hens

USING SUBTRACTION FACTS

Preparatory Activities

On page 140 of the pupil's book, two action pictures are provided which illustrate oral number stories that use subtraction facts. Examples are provided also which use all of the subtraction facts that have been introduced. These exercises will enable the teacher and the children to find how well the facts have been learned.

No preparation is necessary for the exercises. The teacher may wish to tell the children that, on this page, they will use all the subtraction facts that they have learned.

Using Page 140

The children may be told that the pictures illustrate the following number stories, and that they may study the pictures and write the answers to the questions in the number stories:

John put 6 little ducks in a box. Four of the ducks climbed out and waddled away. Then how many ducks were in the box?

Jane's 6 pet kittens were playing with a ball. Five kittens went away. How many kittens were playing with the ball then?

Have the children do the examples.

Follow-up Activities

The teacher will wish to make a very careful evaluation of the pupils' work in the exercises on page 140. She will wish to find which children, if any, still do not understand the subtraction process well enough to use it in number stories. She will try to find what it is that they do not understand and plan a way to help them interpret the stories. This can best be done, probably, by having each child who had difficulty work through a number story with her. As the child tells how he tried to find the answer, the teacher will understand his difficulty.

It will be necessary to tabulate the results of the work with the subtraction examples to find which facts are not known by individual children and also which facts, if any, need to be presented again to the whole group. The facts missed by individuals may be listed on their records so that the teacher can help them learn the facts. The follow-up work can be planned after the tabulation and the individual records are complete.

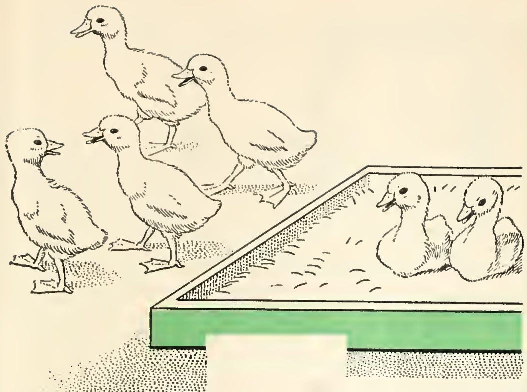
Additional learning helps. If there are any children who need help with number stories, the teacher may wish to use some of the pictures made by the children, or cut from magazines, to illustrate number stories. Helping the children tell the stories which the pictures illustrate may enable them to visualize the process. Then they may be able to interpret the stories successfully.

Each child who missed subtraction examples should be given another chance to learn the facts he missed. He may use the back of the study and practice cards to learn them. Then he may use the front of the cards, with another child, to see if he actually has learned them. If not, he should study the facts again. When he is sure of the facts, he should say them three or four times to try to remember them.

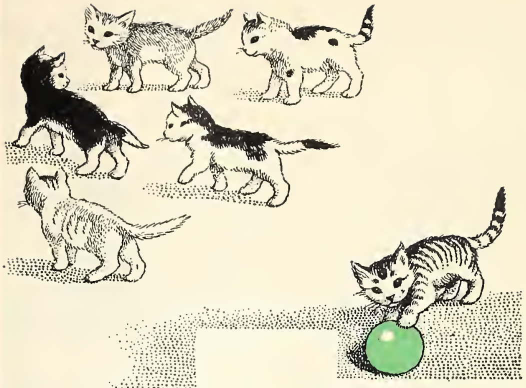
The teacher will wish to provide another set of examples later that use the facts these children found difficult. Letting them use the facts again after a day or two will show whether or not these facts have been learned.

Enrichment activities. The children who do not need help may use the materials on the arithmetic table. They may be interested in making up number stories about buying toys, or about pennies, nickels, dimes, etc.

These children may be interested in putting together all of the study and practice cards that use subtraction facts with minuends of 6, and those with minuends of 5, 4, 3, and 2. Then they may wish to see whether they can say all of the facts.



____ ducks left



____ kitten left

Take away, and tell how many are left.

4 cakes 3 cakes ____cake	6 boats 4 boats ____boats	3 cows 1 cow ____cows	6 rabbits 5 rabbits ____rabbit
4 pets 2 pets ____pets	3 dolls 2 dolls ____doll	6 hats 3 hats ____hats	5 ponies 1 pony ____ponies
6 trains 2 trains ____trains	5 toys 3 toys ____toys	2 beds 1 bed ____bed	5 kittens 4 kittens ____kitten
4 chickens 1 chicken ____chickens	6 wagons 1 wagon ____wagons	5 airplanes 2 airplanes ____airplanes	

MAKING SURE OF TIME, FRACTIONS, AND TERMS

Preparatory Activities

The eighth in the series of "Making Sure" tests is provided on page 141 of the pupil's book. This test is one of four that are planned to help evaluate the year's work.

The test is planned to help the teacher and the children find how well the children have learned to tell time to the hour, to recognize the fraction *one-half,* and to understand the terms *larger* and *smaller,* and *first, next,* and *last.*

The teacher may tell the children that in the exercises on this page they will be able to use some of the things they have learned in arithmetic.

Using Page 141

Have the children look at each clock, find what time it shows, and write below the clock the number that tells the time.

Call attention to the three apples. Tell the children to find the apple that is cut in half and draw a line around it.

Have the children find the cat and draw a larger cat at its left, and a smaller cat at its right.

Help the children identify the toy giraffe, kangaroo, ostrich, and monkey. Have them draw a red line around the first animal, a blue line around the next animal, and a yellow line around the last animal.

Follow-up Activities

The teacher will wish to make a careful evaluation of the children's work on the test. She will wish to make notes on each child's record to indicate what things he has learned and what things he needs another chance to learn. If possible, she will determine not only *what* he found difficult, but also *why,* in her opinion, it was difficult, and *how* she plans to help him overcome the difficulty.

The teacher will also wish to tabulate the results of the test for the group as a whole. In this way she will know how many children succeeded with each item, and how many need another chance to learn.

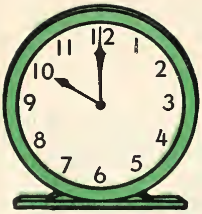
The plan for follow-up work will be based upon the general plan for the time that remains before the school year or the term ends. If the tests are to be used as part of a review of the year's work, and time remains for the review, the plan can be made accordingly. If there is not time for a review, a record of the work can be made for the next teacher. The teacher will keep in mind that the work introduced in Grade One will be retaught in Grade Two. However, this will not prevent her from giving each child an extra chance to learn.

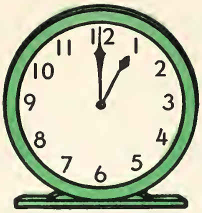
Additional learning helps. If some of the children cannot tell time to the hour, they may be given help with real clocks and with the make-believe clocks they made earlier. The teacher may again explain the way we tell time. Then the children may use the clocks to tell time, and also set them to show the time the teacher indicates.

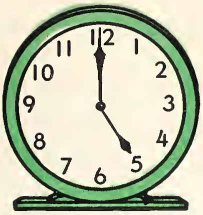
If there are any children who have not learned to recognize the fraction *one-half* as one of the two equal pieces of a whole thing, they may have concrete experiences again. They may divide things, such as apples, paper plates, string, paper, etc., into halves. Then they may use the materials on the arithmetic table to identify halves of things.

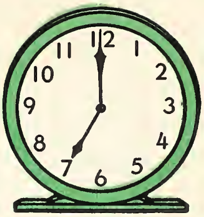
If the terms caused difficulty, realistic experiences that use the terms may be provided.

Enrichment activities. The children who do not need help may get their arithmetic folders and scrapbooks ready to take home. Some of the children may help to sort the materials on the arithmetic table to be displayed in an exhibit. The clockfaces, the fraction charts, and the pictures that illustrate terms may be displayed at this time.

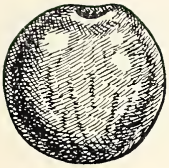


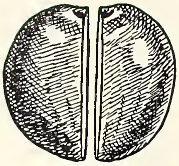


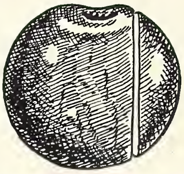




________ ________ ________ ________







MAKING SURE OF ADDITION FACTS

Preparatory Activities

The ninth of the "Making Sure" tests is provided on page 142. It is planned to help the children and the teacher find how well the children have learned the fifteen addition facts that were introduced, and also how well they can interpret number stories that involve addition.

Since the children have not used addition for some time, the teacher will wish to help them recall a few of the addition facts, refresh their memory about the language used in addition, and help them interpret a number story or two.

Using dramatization. This number story may be told for the children to dramatize:

One day 4 boys were reading in the library. Soon 2 girls came to read. How many children were reading then?

If the children have difficulty, ask them to listen again and think what happens in the story. Tell the story again and let them try to interpret it.

Tell this story and let them play it.

Three cows were in the barn. Two more cows came into the barn. Then how many cows were in the barn?

Write the following sentence on the blackboard with the examples:

Tell how many there are in all.

3 balls	5 chickens	3 cows
2 balls	1 chicken	1 cow

Have the children read the sentence and try to do the examples. If they need help, tell them that they are to add. The concrete objects may be used if necessary.

Using Page 142

Explain to the children that they will have a chance to use all of the addition facts in the exercises on this page. Have the children read the direction at the top of the page. Tell them that they are to find the answers for the questions in these stories:

One day 4 kittens climbed on a box. Two more kittens came to get on the box. How many kittens were on the box then?

One day 2 rabbits were playing in front of their house. Four more rabbits came. Then how many rabbits were in front of the house?

Have the children read the examples and find the answers.

Follow-up Activities

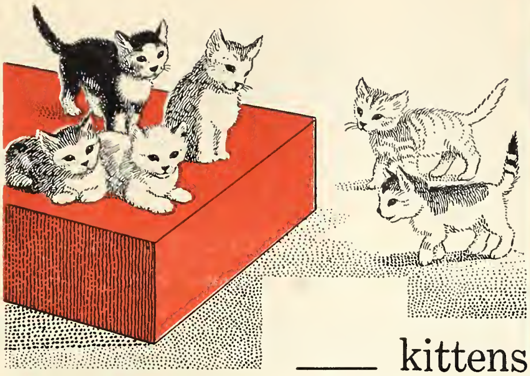
The teacher will wish to find and record the addition facts each child missed and those he got right. Then she will wish to make a tabulation to find which facts the entire group knows and which facts need further attention. The follow-up work will be planned with this information to guide the planning.

Additional learning helps. If there are any children who need more help with number stories involving addition, the teacher will wish to tell number stories for them to dramatize. Then the children may make up other number stories and dramatize them.

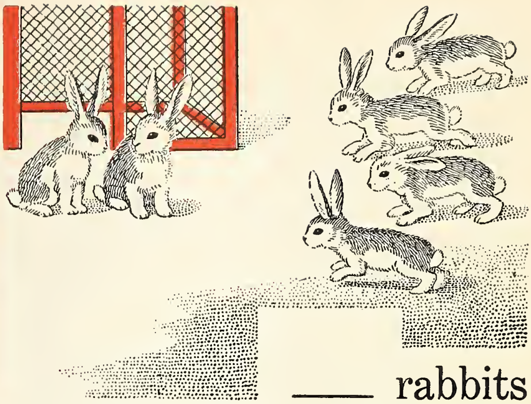
Those children who missed examples, if there are any, may be helped to find the study and practice cards for the addition facts they did not know. They may work together in pairs to study the facts and practise them. Then each child may build the facts he missed with counting objects. When he is sure of the facts, he may say them three or four times.

Enrichment activities. The children who do not need help may assemble all of the cards and pictures that illustrate addition facts or stories that involve addition. These may be displayed as an exhibit, if that is part of the plan for reviewing the work of the year.

Tell how many there are in all.



____ kittens



____ rabbits

2 pets
1 pet
____pets

4 cakes
2 cakes
____cakes

3 beds
1 bed
____beds

2 boats
2 boats
____boats

1 dog
4 dogs
____dogs

1 doll
1 doll
____dolls

3 cows
3 cows
____cows

1 pony
3 ponies
____ponies

2 pigs
3 pigs
____pigs

4 balls
1 ball
____balls

1 hat
2 hats
____hats

1 wagon
5 wagons
____wagons

3 rabbits
2 rabbits
____rabbits

5 airplanes
1 airplane
____airplanes

2 chickens
4 chickens
____chickens

MAKING SURE OF NUMBERS AND MONEY

Preparatory Activities

The tenth in the series of "Making Sure" tests is provided on page 143. The test includes exercises which are planned to help the children and the teacher find how well the children can count by tens and ones and write the resulting two-place number, and how well they understand the relationships between one dollar and pennies, dimes, quarters, and half dollars.

No preparation is necessary for the test. The teacher may tell the children that on this page they will have a chance to use what they have learned about numbers and about money.

Using Page 143

Let the children discover, or explain to them, that there are 10 sticks in each bundle. Then have them count the bundles as tens and the single sticks as ones to find how many sticks there are in the first picture. They may write the number. Have them proceed in the same way with the next picture and write the number.

Help the children find that they can buy 1 marble for 1 cent. Let them read the sentence. Explain that it means to find how many marbles they can buy for one dollar. Tell them that they may write on the line the number of marbles they can buy.

Help them find that they can buy 1 toy car for 10 cents, or a dime. Then proceed in the same way with this exercise.

Help them find that they can buy 1 chair for 25 cents, or a quarter. Then proceed in the same way with this exercise.

Help the children find they can buy 1 cowboy hat for 50 cents, or a half dollar. Then have them proceed in the same way with the last exercise.

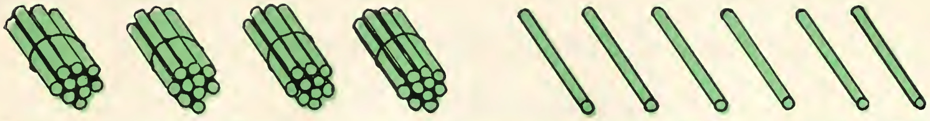
Follow-up Activities

A very careful evaluation should be made of the children's responses to the exercises in the test. The teacher will wish to know which items the whole group did correctly and which items, if any, they were unable to understand and respond to correctly. She will also wish to make an individual record for each child, so that she can find which children, if any, need more help with each item in the test. The follow-up activities can be planned accordingly.

Additional learning helps. If any of the children need more help in understanding the tens and ones idea of two-place numbers, the teacher will wish to give them another chance to learn through the use of the counting sticks in bundles of ten, and single sticks. It may be a good idea to begin with the illustrated chart which shows the numbers *11* to *19* as 1 ten and so many more, and *20* as 2 tens. With this background, the numbers from 21 to 30 may be developed, then those from 31 to 40, and so on. Then the children may be given bundles of ten sticks, and single sticks, to illustrate numbers in various decades. They may try again to find how many sticks there are in each group.

If some of the children need help in understanding the various concepts about money, they may first use toy money to work out and show the value of one dollar, and its relationship to the coins. Then the children may be given another exercise similar to that in their books.

Enrichment activities. The children who do not need help at this time may be asked to sort the materials on the arithmetic table that relate to numbers and money. They may assemble the various cards that illustrate the numbers, the number charts, and the chart with the number words. These may be arranged as an exhibit. The pictures of things that can be bought for a penny, a nickel, a dime, a quarter, etc., may be displayed with the pictures which were made for use in the play store.



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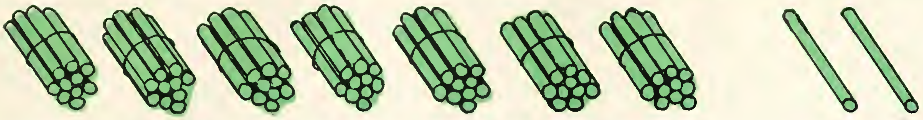

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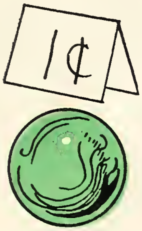
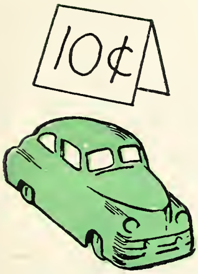


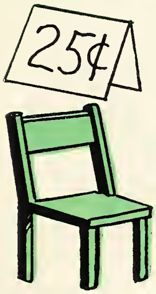
Tell how many for

____



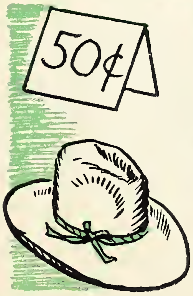
Tell how many for

____



Tell how many for

____



Tell how many for

____

MAKING SURE OF SUBTRACTION FACTS

Preparatory Activities

The eleventh in the series of "Making Sure" tests is provided on page 144 of the pupil's book. The test is planned to help the children and the teacher find how well the children have learned the fifteen subtraction facts that have been introduced, and also how well they can interpret number stories that involve subtraction.

Using dramatization. Since the last exercise of this type which the children had was an exercise in addition, it may be a good idea to help them recall a few subtraction facts and tell a few number stories that involve subtraction. The stories may be dramatized, or illustrated with concrete objects. Such stories as these may serve the purpose:

There were 5 books on the reading table. Ann took 1 of the books to read. How many books were on the table then?

There were 4 chairs around the arithmetic table. Fred took 2 of the chairs to the reading circle. How many chairs were around the table then?

The children may be told that on this page they will have a chance to use all of the subtraction facts they have learned.

Using Page 144

Have the children read the direction at the top of the page. Tell them that they are to find and write the answers for these number stories which the pictures illustrate:

One day 5 boys were flying kites. Three of the boys took their kites and went to play another game. Then how many boys were flying kites?

Six girls were skipping rope one day. Two of the girls got tired and went home. How many girls were skipping rope then?

Have the children do the examples.

Follow-up Activities

The evaluation of the test results should include a record of the responses of the whole group to the number stories and the examples. In this way, the teacher will be able to determine how many children understood the number stories and how many did not. She will know also which subtraction facts all of them have learned and which facts need to be presented and studied again.

The tabulation of the results of the entire group's responses and the record of individual errors will enable the teacher to find what the children have learned and the specific things they need yet to learn. The follow-up activities for the subtraction facts can then be planned to meet both the needs of the whole group and of individual children.

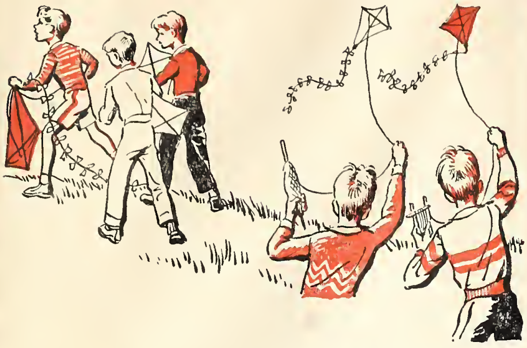
Additional learning helps. If there are any children who need another chance to understand number stories that involve subtraction, they may be helped to make up stories. They may dramatize the stories, or use concrete objects to show what they mean.

If some of the children missed examples in the test, they may use the study and practice cards to learn the facts they do not know. Then they may build the facts with counting objects, and say them several times.

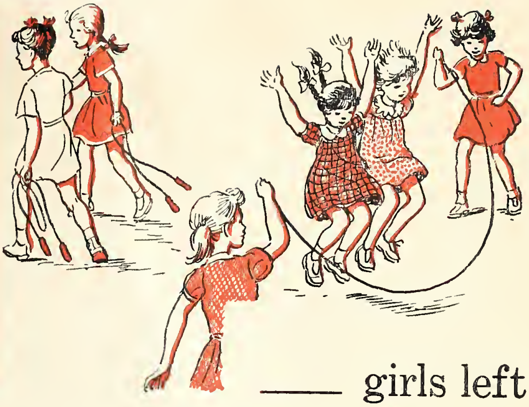
The teacher will probably wish to give another exercise similar to that in the pupil's book, to find out whether or not these children have learned the facts.

Enrichment activities. The children who do not need help may use some of the materials on the arithmetic table. They may assemble the materials related to subtraction to be displayed in the exhibit, if that is part of the plan for finishing the year's work.

Take away, and tell how many are left.



___ boys left



___ girls left

2 hens
1 hen
___hen

5 cows
2 cows
___cows

6 trains
1 train
___trains

3 ponies
2 ponies
___pony

4 beds
1 bed
___beds

6 pigs
4 pigs
___pigs

4 wagons
2 wagons
___wagons

5 cakes
4 cakes
___cake

6 balls
3 balls
___balls

3 pets
1 pet
___pets

6 rabbits
2 rabbits
___rabbits

4 dolls
3 dolls
___doll

5 airplanes
3 airplanes
___airplanes

6 chickens
5 chickens
___chicken

5 kittens
1 kitten
___kittens

Date Due

NOTES

Date Due

JUN 1 3 RETURN

EDUC MAY 20 '7[illegible]

MAY 1 2 RETURN

QA 135 M886 1958 TCH-ED- BK-1
MORTON ROBERT LEE 1889-
MAKING SURE OF ARITHMETIC
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QA 135 M886 1958 tch.ed. bk.1
HISTORICAL
COLLECTION
Morton, Robert Lee, 1889-
Making sure of arithmetic, 1-
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DAY
OK